Perspectives on the Population and Health Situation in Egypt

National Population Council

DHS
Demographic and Health Surveys
Macro International Inc.

Perspectives on the Population and Health Situation in Egypt

Results of Further Analysis of the 1995 Egypt Demographic and Health Survey

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Contraceptive Behavior in the Postpartum Period

by

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1   Background

At the time of the 1995 Egypt Demographic and Health Survey (DHS), fertility in Egypt had fallen to a level of 3.6 births per woman compared to a rate of 5.3 births per woman in 1980 (El-Zanaty et al., 1996). The widespread adoption of use of family planning has been one of the most important factors contributing to the decline in fertility in Egypt. The majority of Egyptian women have used family planning. At the time of the 1995 Egypt DHS, for example, more than 70 percent of currently married women reported having some experience in using family planning, and 48 percent were currently using contraception. Slightly less than one-third of the current users were using an IUD, and 10 percent were using the pill.

In addition to contraceptive behavior, fertility also is influenced by breastfeeding and the consequent periods of postpartum amenorrhea. A number of studies have found that the levels of breastfeeding and contraceptive use are negatively related (Jain and Bongaarts, 1981; Millman, 1985; and Pebley et al., 1985). Nevertheless, for many women, the periods of contraceptive use and breastfeeding overlap. Investigating the overlap between breastfeeding and contraceptive use is important from two standpoints, the effect of hormonal contraceptives on the health of breastfed children and the benefits of early introduction of contraception following a birth (Winikoff and Mench, 1991).

The objective of this paper is to look at the contraceptive behavior of women in Egypt during the postpartum period, and, particularly, at the extent to which periods of postpartum insusceptibility and breastfeeding overlap with contraceptive use following a birth.[1] In considering these issues, the calendar data collected in the 1995 Egypt DHS is used to address a number of key aspects of postpartum behavior, including the likelihood of adopting contraception or becoming pregnant during the period following a birth.

2   Data and Methods

The data used in this analysis come from the 1995 Egypt DHS. The questionnaire used to interview ever-married women of reproductive age in the survey included a calendar which interviewers used in recording information about the events in the respondent's reproductive life during an approximately five-year period preceding the survey. The calendar consisted of 3 columns of data. Information was recorded in the first column on the duration of all periods in which a respondent was pregnant (whether the pregnancy ended in a live birth or not) as well as

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[1]   To carry out the analysis of the paper, the merged information from the calendar and the individual questionnaire were transformed into segments of use and nonuse using programs prepared in the international DHS project (Curtis and Hammerslough, 1995).

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the durations of any periods in which the woman was using contraception. For women discontinuing use of a contraceptive method, the main reason for stopping use was recorded in the second column. The third column of the calendar provided a month-by-month accounting of the woman's marital status. The calendar provided information on the periods of pregnancy and contraceptive use for a total of 12,932 pregnancies; 11,339 of these pregnancies were reported as ending in a live birth and 1,593 ended in a still birth, miscarriage, or abortion.

For each live birth in the five years before the survey, information also was obtained in the health section of the questionnaire about the length of the periods of postpartum breastfeeding, amenorrhea and abstinence. For purposes of this analysis, the latter information was combined with the data recorded in the calendar on contraceptive use to provide a month-by-month history of key postpartum events following each of the births a woman had during the five-year period.

In some cases, the periods of breastfeeding, amenorrhea, or abstinence were not complete by the end of the analysis period. Also, not all women had initiated contraception by the end of the analysis period. Table 1 shows the percentages of the live births for which the periods of breastfeeding, postpartum amenorrhea, postpartum abstinence and postpartum nonuse of contraception were incomplete or censored. Censored durations were more common in the case of breastfeeding than for postpartum abstinence or amenorrhea. Overall, about 25 percent of the live births were still being breastfed at the end of the analysis period. In contrast, 10 percent of the periods of postpartum amenorrhea, and 2 percent of the periods of postpartum abstinence were censored. With respect to periods of nonuse of contraception, the data show that 44 percent of all pregnancies were followed by incomplete or censored periods of nonuse, i.e., periods in which the woman had not yet adopted a contraceptive method (or had become pregnant).

Table 1 Incomplete duration following births

Percentage of births (pregnancies) followed by incomplete (censored) periods of breastfeeding, postpartum amenorrhea, postpartum abstinence and nonuse of contraception, Egypt 1990-1995

Event	Percentage with incomplete periods	Weighted number of births (pregnancies)
Breastfeeding	24.7	10,495
Amenorrhea	10.6	10,465
Abstinence	2.2	10,438
Postpartum nonuse	14.8	12,932

Note: In the case of breastfeeding, amenorrhea, and abstinence, the percentages are based on information for live births only. For postpartum nonuse, the percentages are based on all pregnancies.

Life table techniques were used in this analysis in order to deal with the censored data. (Namboodiri and Suchindran, 1987). For each woman, the three-month preceding the survey was excluded from the analysis to avoid the bias resulting from an unrecognized first-trimester pregnancy.

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3   Data Quality Assessment

As mentioned before, the analysis in this paper depends on data obtained from two sections of the 1995 DHS individual questionnaire: data recorded in the calendar and information from the health section. Recording data in the calendar helped interviewers to identify and resolve inconsistencies in birth dates and segments of use and non-use. Although the calendar had this advantage, it may have suffered from recall errors. The respondents may not have correctly recalled information, particularly for periods relatively distant from the survey date. Recall errors often result in heaping of events on specific durations such as 6, 12, 18, and 24 months.

Figure 1 presents the distributions of the completed durations of breastfeeding, postpartum amenorrhea, postpartum abstinence, and nonuse of contraception. An examination of the distributions indicates that there is considerable variation in the extent to which the data are affected by heaping. In the case of the breastfeeding data, there is noticeable heaping on 12, 18, and 24 months, with the most severe heaping on 24 months. On the other hand, there is little problem with the postpartum amenorrhea data except for some minor heaping on 12 months. Moreover, no significant heaping is observed in the reported durations of nonuse of contraception or abstinence. Obviously, the heaping that is observed in breastfeeding durations may affect the analysis of the duration of the overlap between postpartum contraceptive use and breastfeeding. However, the overall effect of the heaping may not be very great since it is likely that the reported (heaped) value was over the actual value in some cases and under the actual value in others.

Figure 1
Percent distribution of completed durations of breastfeeding, postpartum amenorrhea, abstinence, and nonuse of contraception, Egypt, 1995

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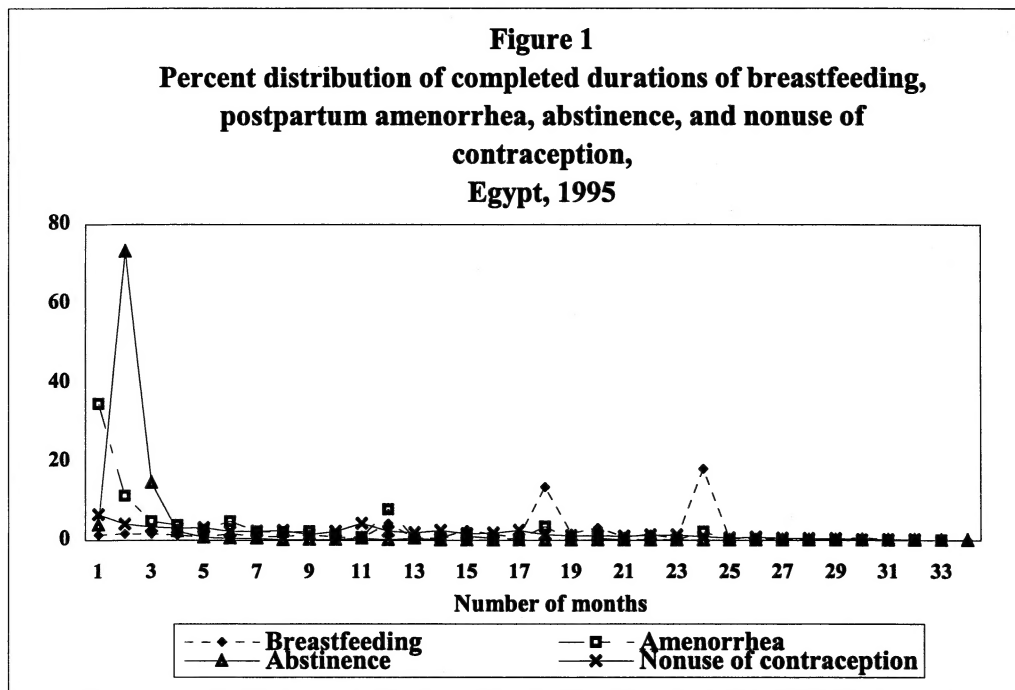
4   Pregnancy and Contraceptive Adoption Rates Following a Birth

This section addresses two basic issues concerning fertility behavior during the postpartum period: the rates at which women become pregnant again and the rates at which they adopt contraception. Life-table techniques are used for calculating the postpartum contraceptive or pregnancy rates. Differentials in postpartum behavior by selected background characteristics of the respondents are discussed. In addition, for women who had used contraception before the pregnancy and discontinued for some reason, the analysis takes into account the prior method used and the reason for discontinuation.

Research has shown that short birth intervals involve increased mortality risks for the child (Hobcraft, 1991). The results in Table 2 indicate that the interval between birth (or a pregnancy termination) and the next pregnancy is less than 2 years for many Egyptian women. Overall, 26 percent of the respondents in the 1995 DHS who gave birth (or other pregnancy termination) became pregnant again within a 24-month period, with 16 percent reporting that they were pregnant within 12 months following delivery.

Table 2   Contraceptive adoption rates

Life table adoption rates following live births and other pregnancy terminations, Egypt 1995

Duration	Became pregnant (percent)	Accept modern method (percent)	Accept traditional method (percent)	Not using (percent)
3 months	5.1	33.1	4.2	57.6
6 months	9.1	38.0	4.3	50.4
12 months	15.8	42.3	4.3	37.7
18 months	22.7	45.4	4.3	27.6
24 months	26.2	46.7	4.3	22.8

Note: Modern methods include: pill, IUD, injectable, Norplant, condom, vaginal methods, female sterilization and male sterilization. Traditional methods include periodic abstinence, prolonged breast-feeding, withdrawal and other (folk) methods.

Table 2 also shows the rates at which women adopt contraception following a birth (or other termination). Many Egyptian women indicate that they adopt a family planning method shortly after giving birth. More than one-third say that they began using contraception (mainly modern methods) within three months following a delivery, and 47 percent were using at the end of 12 months after delivery.

As Table 3 shows, both the rates at which women become pregnant or adopt contraception after a delivery vary according to background characteristics. The 12-month pregnancy rate following a delivery is higher for younger women than for older women and for spacers (women wanting to delay the next birth by 2+ years) than for limiters (women wanting no more children). Rates also are higher for rural than urban women, for women living in rural areas in Upper Egypt than for residents of other areas, and for women with no education than for

educated women. Overall, the highest pregnancy rates are observed for mothers with no education (23 percent) and for mothers in rural Upper Egypt (20 percent).

Table 3   Contraceptive adoption rates by background characteristics

Life table 12-month contraceptive adoption rates by background characteristics, Egypt 1995

Background characteristics	Became pregnant (percent)	Accept modern method (percent)	Accept traditional method (percent)	Not using (percent)	Number of segments
Age					
Under 25	15.8	42.2	4.2	37.8	5,463
25 – 34	18.9	45.4	5.1	30.6	5,826
35 – 49	12.2	45.3	4.8	37.7	1,643
Contraceptive intent					
Spacer	16.7	43.0	4.3	36.0	7,080
Limiter	13.5	41.3	4.5	40.7	5,835
Number of living children					
0-1	16.8	45.1	4.1	34.0	3,756
2	13.5	44.8	4.4	37.3	2,855
3	12.7	42.5	4.4	40.4	2,275
4+	16.9	40.9	4.7	37.5	4,046
Urban-rural residence					
Urban	14.3	43.8	4.1	37.8	5,133
Rural	16.9	41.5	4.5	37.1	7,799
Place of residence					
Urban Governorates	15.2	45.7	4.3	34.8	2,398
Lower Egypt urban	15.3	43.9	4.2	36.6	1,200
Lower Egypt rural	16.8	42.5	4.3	36.4	3,660
Upper Egypt urban	14.5	41.2	4.4	39.9	1,460
Upper Egypt rural	20.2	39.3	4.7	35.8	4,087
Frontier Governorates	16.3	42.5	4.4	36.7	127
Education					
No education	22.9	21.9	4.9	50.3	5,903
Some primary	15.5	42.3	4.2	38.0	2,343
Comp. primary/some sec.	14.2	40.9	4.6	40.3	1,489
Comp. secondary/ higher	14.1	45.1	4.6	36.2	3,197
Total	15.8	42.3	4.3	37.7	12,932

Note: Number of segments may not add to total for some variables due to cases for which the information was missing.

The differentials in contraception adoption rates shown in Table 3 indicate that education plays an important role in the postpartum contraceptive behavior of the women. At the end of the 12-month period following a birth, 27 percent of women who never attended school have begun using family planning compared to 46 percent or more of women who have attended school.

The results of the 1995 DHS also suggest that a woman's postpartum contraceptive behavior is strongly related to her prior experience in using contraception and the reason she had for discontinuing use. Table 4 shows the 12-month pregnancy and method adoption rates following termination of pregnancy among women who had used any method prior to pregnancy

by the reason of discontinuation. The results indicate that 75 percent or more of women who had used a method prior to their most recent pregnancy begin using contraception again within 12 months of the termination of their pregnancy. Many of the women do not use the same method that they had used prior to the pregnancy.

Table 4 Contraceptive adoption rates by prior method used and reason for discontinuation

Life table 12-month contraceptive adoption rates among women who had used any contraceptive method in the month prior to the pregnancy ending in the birth by prior method used and reason for discontinuation, Egypt 1995

Method and reason for discontinuation	Became pregnant (percent)	Return to same method (percent)	Accept other modern method (percent)	Accept other traditional method (percent)	Not using (percent)	Number of segments
IUD						
Contraceptive failure	12.8	25.8	23.0	25.9	12.5	186
Wanted pregnancy	10.0	23.7	24.7	28.4	13.1	462
Fear side effects	0	28.3	27.8	31.3	12.6	77
Other	8.0	26.9	24.1	26.9	13.4	110
Pill						
Contraceptive failure	9.3	23.9	23.7	25.3	17.7	146
Wanted pregnancy	14.1	22.4	23.9	26.3	13.3	125
Fear side effects*	-	-	-	-	-	13
Other*	-	-	-	-	-	15

* Omitted due to small number of segments.

5 Overlap between Postpartum Breastfeeding, Amenorrhea, and Abstinence and Contraceptive Use

The data from the 1995 Egypt DHS can also be used to look at the overlap between periods of contraceptive use and postpartum breastfeeding, amenorrhea and abstinence.

Postpartum behavior by duration since birth

Before considering the overlap between contraceptive use and other postpartum variables, it is useful to look at how the patterns of breastfeeding, abstinence and amenorrhea vary by the duration following a birth. Figure 2 shows that the decline in the proportion of women who are abstaining after giving birth is quite rapid, while the decreases in postpartum breastfeeding and amenorrhea are more gradual. At six months postpartum, around 80 percent of mothers are still breastfeeding, and more than one-third are still amenorrhic, while less than 5 percent are abstaining. By 12 months postpartum, nearly one-third of mothers are no longer breastfeeding, more than 75 percent have resumed menstruating and nearly all are no longer abstaining. More than one fifth of the mothers are still breastfeeding two years postpartum.

Figure 2
Percentage of mothers still breastfeeding, amenorrheic, or abstaining from sex,
Egypt, 1995
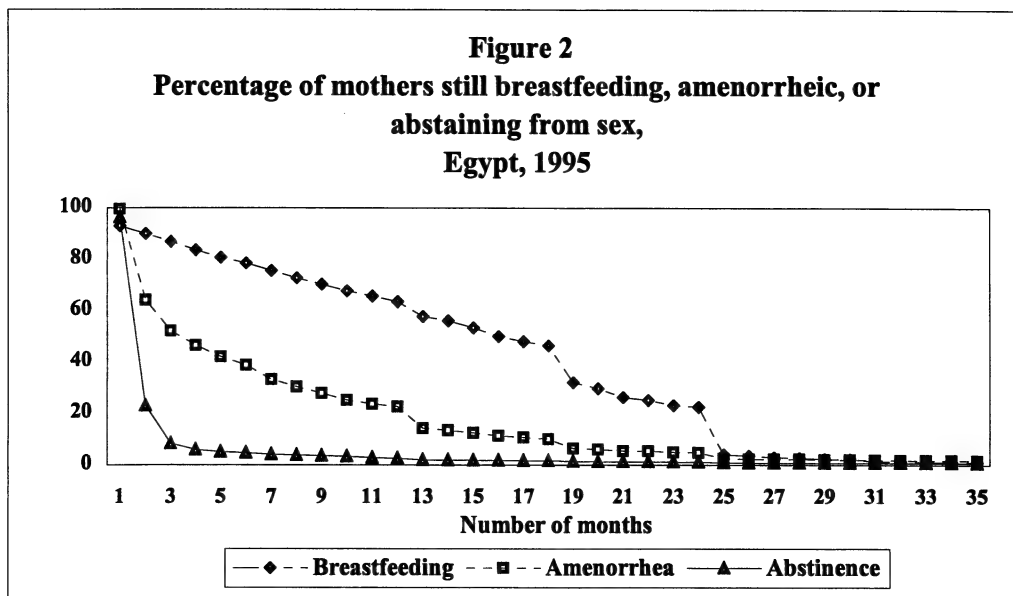
The cumulative percentages of mothers who have initiated contraceptive use or become pregnant are presented in Figure 3 by method. The proportion who use contraception rises rapidly within the first two months after giving birth; more than one-third of mothers report initiating contraceptive use within three months after having a birth. After that point, the rise in contraceptive use is gradual. At the end of the 24-month period following a birth, almost 50 percent of mothers have initiated use of contraception.

Figure 3
Contraceptive and pregnancy status
behavior following birth
Egypt, 1995

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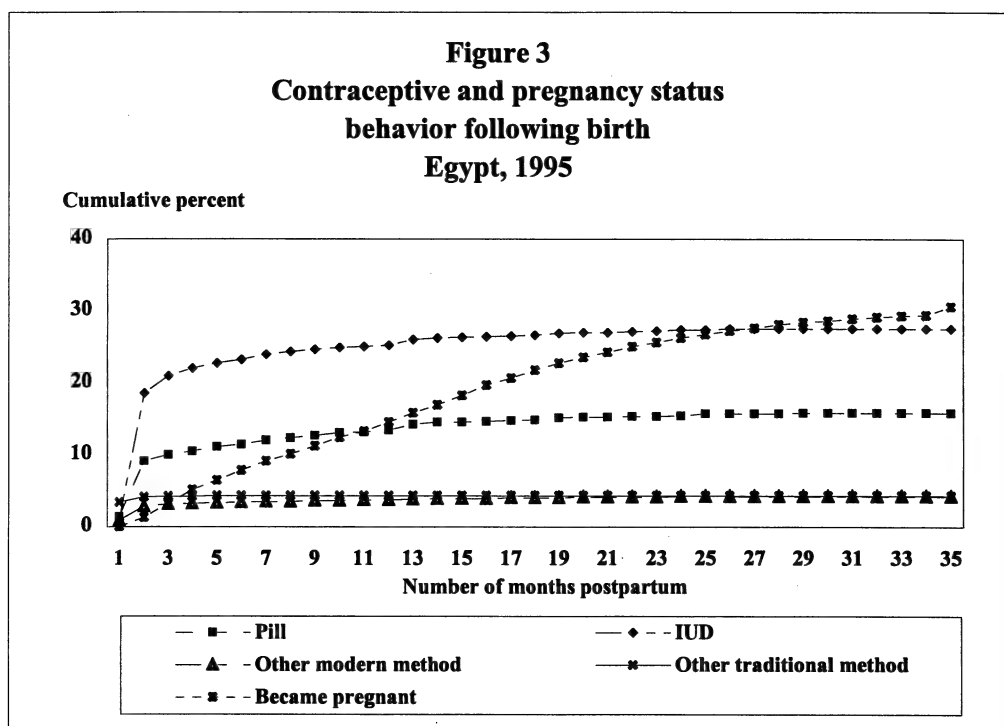
The results in Figure 3 indicate that the percentage of mothers who adopted the IUD is early in the postpartum period is around double the percentage who have initiated pill use. One-fifth of mothers had begun using an IUD by the end of first three months after a birth, and slightly more than 25 percent had initiated use of an IUD within a two-year period after a birth. Considering the pill, around 1 in 10 mothers began using the pill within the first three months following a birth, and around 15 percent were using the pill within the two-year period following a birth.

Women who initiated use of other methods during the postpartum period exhibit a similar pattern (Figure 3). Use is initiated early in the postpartum period by many of these women. Those women who use other contraceptive methods begin using in the early months after birth. The overall level of use of other methods is low in comparison to the IUD; less than 10 percent of mothers have initiated use of other methods in the two years after birth.

The proportion of mothers who became pregnant in the postpartum period is quite high. Just under 15 percent of mothers become pregnant within a year after birth, more than one-quarter become pregnant within in the two years after birth, and slightly less than one-third become pregnant in the 3 years after birth.

Differentials in postpartum behavior

Differentials in the durations of breastfeeding, postpartum amenorrhea and postpartum abstinence are evident across various population subgroups in Egypt. Table 5 looks at breastfeeding behavior of mothers by background characteristics. Differences between groups are evident beginning in the three-month period following birth. Overall, older mothers were more likely to extend the breastfeeding duration than younger mothers. The median duration of breastfeeding was 15 months for mothers who are less than 25 years old, while it was 18 months for mothers age 35 years or more. Shorter durations of breastfeeding were also observed for mothers with fewer children than for higher parity mothers. Women from rural areas breastfed for longer periods women from urban areas. Educated women breastfed for shorter periods than their less educated counterparts.

Table 6 shows differentials in postpartum amenorrhea by background characteristics. The length of the period of postpartum amenorrhea was correlated positively with the age of the mother and with the number of living children she had. The median duration of postpartum amenorrhea was longer for women with no education (4 months) than for educated women (2 months). The median duration of postpartum amenorrhea in urban areas (2 months) was half the median duration of postpartum amenorrhea in rural areas (4 months).

In contrast to breastfeeding and amenorrhea behavior, there were very few differences among DHS respondents in the durations of postpartum abstinence. The median duration of postpartum abstaining was 1 month for all women regardless of background characteristics as shown in Table 7.

Table 5 Breastfeeding behavior by background characteristics

Percentage of children still being breastfed at selected durations following the birth and median duration of breastfeeding by background characteristics, Egypt 1995

| Background characteristics | Percentage still breastfeeding at: | | | | | Median duration (months) | Number of births |
	3 months	6 months	12 months	18 months	24 months		
Age							
Under 25	86.8	78.7	62.5	44.0	19.7	14.4	4,548
25 – 34	87.3	78.6	63.9	46.7	22.9	15.7	4,763
35 – 49	85.0	76.5	64.3	52.1	29.9	17.1	1,184
Contraceptive Intent							
Spacer	86.1	78.0	63.2	44.9	20.1	14.4	5,511
Limiter	87.6	78.9	63.5	47.6	24.7	15.6	4,973
Number of living children							
0-1	83.1	73.7	56.7	37.8	14.7	12.8	2,758
2	87.1	78.9	62.9	44.4	18.6	14.5	2,435
3	88.2	80.5	65.8	49.8	24.2	16.5	1,937
4+	88.9	80.7	67.7	52.2	30.2	17.1	3,365
Urban-rural residence							
Urban	84.6	74.8	59.2	41.4	15.8	13.6	4,028
Rural	88.2	80.6	65.9	49.1	26.3	16.5	6,467
Place of residence							
Urban Governorates	85.5	75.8	58.7	40.2	14.3	13.6	1,848
Lower Egypt urban	86.1	74.8	59.1	43.3	17.0	13.7	954
Lower Egypt rural	87.9	81.1	65.5	47.9	24.2	15.6	3,020
Upper Egypt urban	81.9	73.3	60.0	41.9	17.4	14.7	1,164
Upper Egypt rural	88.5	80.3	66.4	50.4	28.3	17.8	3,404
Frontier Governorates	86.2	75.4	60.1	45.2	24.1	15.5	105
Education							
No education	88.2	80.5	66.5	50.5	27.7	17.8	4,812
Some primary	87.5	79.8	65.4	48.3	24.4	16.6	1,898
Comp. primary/some sec.	82.7	74.8	59.2	41.5	16.5	13.6	1,199
Comp. secondary/higher	85.7	75.1	57.8	38.6	13.3	13.6	2,586
Total	86.8	78.4	63.3	46.2	22.3	14.4	10,495

Note: There were 844 cases in which information on the duration of breastfeeding was missing.

Table 6 Postpartum amenorrhea by background characteristics

Percentage of mothers still amenorrhic at selected durations following the birth and median
duration of amenorrhea by background characteristics, Egypt 1995

Background characteristics	3 months	6 months	12 months	18 months	24 months	Median duration (months)	Number of births
Age							
Under 25	49.6	35.4	19.1	8.2	4.0	1.7	4,539
25 – 34	53.1	40.1	23.5	10.5	4.6	2.7	4,746
35 – 49	57.0.	45.0	30.2	15.0	7.8	3.6	1,180
Contraceptive intent							
Spacer	49.9	36.9	21.0	9.8	4.8	1.7	5,492
Limiter	54.4	40.6	23.0	10.2	4.6	2.6	4,962
Number of living children							
0-1	41.2	27.3	12.7	5.8	2.9	1.8	2,754
2	48.0	34.2	17.3	7.9	3.4	1.7	2,422
3	54.0	41.3	24.6	11.2	4.7	2.7	1,933
4+	62.0	49.6	32.6	14.3	7.1	4.5	3,356
Urban-rural residence							
Urban	41.6	28.1	13.1	6.3	2.7	1.8	4,006
Rural	58.5	45.2	28.1	12.3	5.9	3.5	6,459
Place of residence							
Urban Governorates	36.4	23.7	10.2	5.2	2.3	1.7	1,838
Lower Egypt urban	41.1	28.0	14.2	6.7	2.5	1.8	955
Lower Egypt rural	50.0	38.1	23.0	10.7	5.3	3.0	3,018
Upper Egypt urban	57.5	35.3	16.9	7.8	3.6	2.0	1,152
Upper Egypt rural	66.2	51.6	32.8	13.9	6.5	5.4	3,397
Frontier Governorates	48.2	31.5	15.1	7.1	3.2	2.0	105
Education							
No education	59.5	45.9	29.0	13.1	6.2	3.7	4,802
Some primary	56.6	42.8	26.4	11.7	5.5	3.5	1,888
Comp. primary/some sec.	44.3	30.4	16.0	6.6	2.6	1.8	1,196
Comp. secondary/higher	38.2	25.9	10.0	4.6	2.2	1.8	2,579
Total	52.0	38.6	22.4	10	4.7	2.6	10,465

Note: There were 874 cases in which information on the duration of postpartum amenorrhea was
missing.

Table 7 Postpartum abstinence by background characteristics

Percentage of mothers still abstaining from sex following birth at selected durations following the birth and median duration of postpartum abstinence by background characteristics, Egypt 1995

Background characteristics	3 months	6 months	12 months	18 months	24 months	Median duration (months)	Number of births
Age							
Under 25	7.4	4.2	2.1	1.3	0.6	0.6	4,523
25 – 34	8.6	4.5	2.4	1.7	1.2	0.6	4,737
35 – 49	9.9	6.0	4.1	2.5	2.1	08	1,178
Contraceptive intent							
Spacer	7.9	4.7	2.3	1.5	1.1	0.6	5,470
Limiter	8.6	4.4	2.6	1.7	1.1	0.6	4,958
Number of living children							
0-1	8.7	4.3	1.5	0.8	0.4	0.6	2,736
2	8.4	4.9	2.4	1.8	1.1	0.6	2,422
3	7.8	4.3	2.9	1.8	1.2	0.6	1,927
4+	7.9	4.7	3.1	2.0	1.5	0.6	3,354
Urban-rural residence							
Urban	7.6	3.2	1.6	0.9	0.7	0.6	3,995
Rural	8.6	5.4	3.0	2.0	1.3	0.6	6,443
Place of residence							
Urban Governorates	6.2	2.2	1.3	1.0	0.8	0.7	1,825
Lower Egypt urban	9.4	4.0	1.8	1.0	0.7	0.6	949
Lower Egypt rural	8.1	4.5	2.3	1.5	0.9	0.7	3,007
Upper Egypt urban	8.2	4.2	2.1	0.9	0.7	0.6	1,161
Upper Egypt rural	9.1	6.2	3.7	2.4	1.6	0.6	3,393
Frontier Governorates	8.5	4.1	1.9	1.0	0.7	0.6	103
Education							
No education	8.6	5.0	2.9	2.0	1.0	0.6	4,796
Some primary	8.5	6.0	3.7	2.2	1.5	0.6	1,884
Comp. primary/some sec.	7.3	2.8	1.1	0.5	0.1	0.6	1,194
Comp. secondary/higher	7.7	3.4	1.4	0.9	0.7	0.7	2,564
Total	8.2	4.6	2.5	1.6	1.1	0.6	10,438

Note: There were 901 cases in which information on the duration of postpartum abstinence was missing.

6 Overlap between Periods of Breastfeeding, Amenorrhea, Abstinence, and Contraceptive Use

Recent research examining the patterns of breastfeeding, amenorrhea, and contraception in developing countries has shown a strong negative association between the adoption of contraception and breastfeeding and amenorrhea (Jain and Bongaarts, 1981; Millman, 1985; Pebley, Goldberg and Menken, 1985). This analysis looks at whether a similar association is observed for Egypt.

Table 8 presents the median duration of breastfeeding, postpartum amenorrhea and abstinence by the first contraceptive method a woman adopted following birth. The median duration of breastfeeding among mothers who adopted the pill and mothers who used the IUD is slightly higher than among mothers who used other methods when they first initiated use following a birth. A somewhat shorter median duration of breastfeeding is found among mothers who did not use a method and became pregnant. The shortest duration of breastfeeding was found mothers who did not use any method and did not become pregnant.

Table 8 <u>Median duration of postpartum behavior by first method adopted following birth</u>

Median duration of postpartum breastfeeding and amenorrhea by first contraceptive method used in pregnancy interval following the index birth, Egypt 1995

Contraceptive method	Median duration of breastfeeding	Median duration of amenorrhea	Median duration of abstinence	Number of births
IUD	17.3	1.6	0.6	3,144
Pill	17.5	1.6	0.6	1,704
Other methods	16.6	5.3	0.6	962
No method, became pregnant	15.4	3.5	0.6	2,760
No use and no pregnancy (censored)	9.7	4.6	0.7	1,869
Total	14.3	2.6	0.6	10,439

The median duration of postpartum amenorrhea among mothers who initiated contraceptive use by adopting an IUD or the pill was 2 months compared with 5 months for women adopting other methods. The median duration among mothers who did not use any contraceptive method was 4 months for those who became pregnant during the period following a birth compared to 5 months among those women who did not become pregnant.

The median duration of postpartum abstinence was less than 1 month, regardless of the woman's contraceptive use and/or pregnancy status.

Table 9 examines the proportions of births in which women report an overlap between the initiation of contraceptive use and the period of breastfeeding, postpartum amenorrhea, and postpartum abstinence. Slightly less than half of recent births are followed by an overlap between breastfeeding and contraceptive use. More than 20 percent of the mothers breastfed and used an IUD at the same time compared to 10 percent of mothers who breastfed and used the pill after birth. The median duration of the overlap between breastfeeding and contraceptive use is 13 months for IUD users and 10 months for pill users.

The results in Table 9 show that it is less common for women to initiate contraceptive use while they are amenorrhic or abstaining. Fewer than one in five births is followed by an overlap between the initiating use and amenorrhea, and only around 10 percent are followed by overlap between contraceptive use and abstinence. The median duration of overlap is less than one month for the two behaviors. This confirms that the majority of mothers wait until they resume

Table 9 <u>Percent overlap and median duration of overlap between contraceptive use and postpartum behavior</u>

Percentage of births followed by overlap between contraceptive use and breastfeeding, amenorrhea and abstinence and median duration of overlap, by method, Egypt 1995

Overlap with	Breastfeeding		Amenorrhea		Abstinence	
	Percent overlap	Median duration	Percent overlap	Median duration	Percent overlap	Median duration
IUD	21.4	12.6	8.4	0	4	0
Pill	10.7	9.7	3.7	0	2.1	0
Other method	18.5	1.8	7.7	0	4.3	0
No overlap	49.4	-	80.2	-	89.6	-
Number of births	10,495		10,465		10,438	

menstruation or sex to begin using any contraception. It is also consistent with the pattern that might be expected in view of the comparatively short durations of postpartum amenorrhea and abstinence observed among Egyptian women.

Table 10 shows the percentage of births that are followed by an overlap between contraceptive use and breastfeeding and amenorrhea or abstinence according to selected background characteristics of mothers. Births to younger mothers (under age 35) are more likely than births to older mothers to be followed by an overlap between contraceptive use and breastfeeding. Births to spacers are less likely than births to limiters to be followed by an overlap between breastfeeding, amenorrhea or abstinence and contraceptive use. The relationship between the number of living children and the overlap between contraceptive use and other postpartum behavior is curvilinear.

The percentage of births followed by an overlap with each of the three postpartum behaviors and contraceptive use is higher in urban areas than rural areas. The patterns also vary by place of residence. For example, nearly 60 percent of mothers in urban Lower Egypt report an overlap between breastfeeding and contraceptive use while only 42 percent of mothers in rural Upper Egypt experience any overlap between periods of breastfeeding and contraceptive use. The percentage of births followed by an overlap period between contraceptive use and any of the three behaviors increases as education increases.

Table 10 Overlap between contraceptive use and postpartum behavior by background characteristics

Percentage of births followed by overlap between contraceptive use and breastfeeding, amenorrhea and abstinence and median duration of overlap by background characteristics, Egypt 1995

Background characteristics	Breastfeeding		Amenorrhea		Abstinence	
	Percent	Median	Percent	Median	Percent	Median
Age						
Under 25	53.7	2.6	18.7	0	9.8	0
25 – 34	51.7	3.6	21.7	0	10.8	0
35 – 49	37.0	0.7	17.8	0	11.0	0
Contraceptive intent						
Spacer	47.2	2.5	16.0	0	7.9	0
Limiter	55.0	4.6	24.5	0	13.5	0
Number of living children						
0-1	46.1	2.5	15.0	0	8.8	0
2	56.6	4.3	21.9	0	11.5	0
3	55.2	3.6	23.5	0	11.6	0
4+	48.2	1.8	21.0	0	10.4	0
Urban-rural residence						
Urban	54.0	5.6	22.3	0	12.5	0
Rural	48.5	1.7	18.3	0	9.1	0
Place of residence						
Urban Governorates	54.0	6.6	23.2	0	13.4	0
Lower Egypt urban	59.0	8.3	24.6	0	14.6	0
Lower Egypt rural	55.9	5.5	22.9	0	13.0	0
Upper Egypt urban	49.6	2.6	19.3	0	9.4	0
Upper Egypt rural	42.0	0.6	14.4	0	5.6	0
Frontier Governorates	53.4	3.2	23.1	0	14.3	0
Education						
No education	45.9	1.5	16.9	0	8.5	0
Some primary	49.1	2.6	20.6	0	10.9	0
Comp. primary/some sec.	53.9	4.3	20.9	0	10.1	0
Comp. secondary/higher	60.0	6.5	24.5	0	13.7	0
Total	50.7	2.8	19.9	0	10.4	0

Figure 4 shows the probability of acceptance of postpartum contraception (IUD, pill and other methods) relative to the time of weaning. The figure illustrates a pattern of very early adoption of contraceptive methods relative to the cessation of breastfeeding.

The probability of accepting contraception in relation to the month of resumption of menstruation is shown in Figure 5. The figure makes clear that the majority of mothers wait until their menstruation resumes to begin contraception. However, around 10 percent of IUD or pill users start using their method before resumption of menstruation.

Figure 4
Probability of initiating use of the IUD, pill, and other methods relative to weaning,
Egypt 1995

Months relative to weaning

IUD - - □ - - Pill — △ — Other method
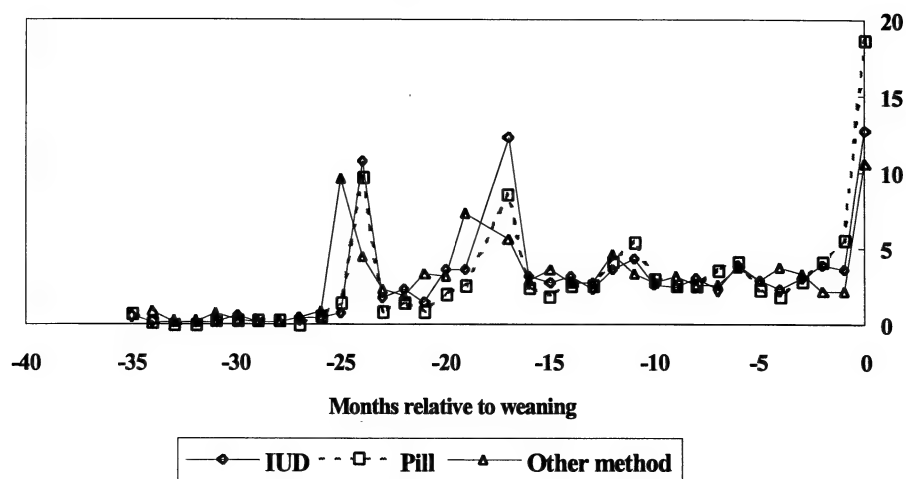
Figure 5
Probability of initiating use of the IUD, pill, and other methods relative to resuming menstruation,
Egypt, 1995

Months relative to resuming menstruation

IUD — □ — Pill — △ — Other method

15
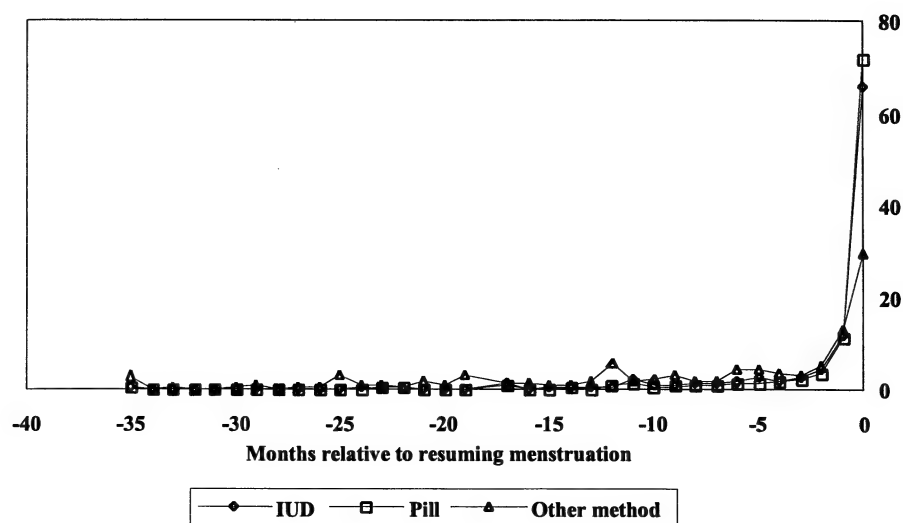
7 Summary and Conclusions

The purpose of this paper is to investigate the behavior of women in Egypt during the postpartum period. The findings of the analysis are of importance to policy makers and family planning program managers in Egypt. They indicate that more than 25 percent of women become pregnant again within the 24 months after delivery. The analysis also found that more than half of the women initiate contraception within 2 years after delivery. This ratio is not as high as that found in some other countries, e.g., 80 percent in Zimbabwe (Sambisa and Curtis, 1997). However, coupled with the pattern of high discontinuation rates that was also found in the study, it suggests a need for additional efforts to improve family planning counseling, especially for rural and less educated women.

The results of the analysis did not find the expected negative association between contraceptive use and breastfeeding. The median duration of breastfeeding of users is more than 17 months while the median duration of breastfeeding of the nonusers is 10 months. However, a negative association was found between contraceptive use and postpartum amenorrhea and postpartum abstinence. This suggests that menstruation following a birth may be an important factor in triggering decisions to adopt family planning. Again counseling is needed to ensure that women are aware that they should adopt contraception prior to the end of the period of postpartum amenorrhea if they are to be fully protected from unwanted pregnancies.

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Contraceptive Use Dynamics in Egypt, 1995

by

Saad Zaghlool Amin

Efforts to promote family planning started in Egypt as early as the late 1930s, with the activities of private voluntary societies. Formal governmental efforts to promote the voluntary use of contraception among married women began when the National Family Planning Program (NFPP) was initiated in 1966. The NFPP program was concerned with reducing the relatively high level annual rate of population growth (2.5 percent) at the time. In addition to providing acceptors with contraceptive methods, a major focus of the NFPP was to create awareness among the population of the negative effects that the high rate of growth had on socio-economic development. In 1985, the government strengthened its commitment to the family planning program with the initiation of the National Population Council (NPC). The number of family planning units in the governorates was expanded, and the units were provided with the necessary human resources and materials required to meet the needs of acceptors.

As a result of both the governmental and non-governmental efforts to promote family planning, the level of family planning use reached 48 percent of married women in 1995 (El-Zanaty et al., 1996). As the contraceptive prevalence rate has increased in Egypt, concern has been expressed that the focus of the NFPP should shift from encouraging couples to adopt contraception to providing them with contraceptive options to meet their needs, thereby reducing the levels of discontinuation.

1   Objectives of the Study

This study involves a comprehensive investigation of the patterns of discontinuation, switching and failure among contraceptive users in Egypt. The study is intended to assist policy-makers to understand differentials in the efficacy of contraceptive use among subgroups (Curtis and Hammerslough, 1995), as part of the overall effort to improve the continuation rates among family planning users. The study was undertaken because prior investigations of contraceptive use dynamics in Egypt have not involved an in-depth consideration of differentials of contraceptive discontinuation. The study also is important because of its focus on method switching. As described below, there have been several studies that have examined the issue of method switching among Egyptian users. Nevertheless, method switching remains among the least studied of contraceptive behaviors. Moreover, the programmatic implications of method switching have not been fully explored.

2   Background

Before examining in more detail the dynamics of contraceptive adoption and discontinuation, it is important to look briefly at what is known about the overall patterns of

contraceptive use in Egypt. In addition, it is useful to consider the results of previous studies that have examined contraceptive use dynamics in Egypt.

Trends and differentials in contraceptive use

Several national demographic sample surveys carried out in Egypt since 1980 provide information on trends in the level of fertility and family planning practice in the country. Table 1 describes the trends in contraceptive use in Egypt, using data from these studies. About one-quarter of married women in reproductive ages were using family planning methods in 1980. After 1980, contraceptive use expanded rapidly, doubling from 24 percent to 48 percent at the time of the 1995 DHS survey. The pace of change in the use rate was not uniform during this period. The rate rose rapidly in the 1980s, but the pace of change slowed significantly in the 1990s, with virtually no change observed in the level of use during the period 1992-1995. The

Table 1 Trends in current use of family planning methods

Percent distribution of currently married women by the family planning method currently used, Egypt 1980-1995

Method	EFS 1980	ECPS 1984	EDHS 1988	EMCHS 1991	EDHS 1992	EDHS 1995
Any method	24.2	30.3	37.8	47.6	47.1	47.9
Any modern method	22.8	28.7	35.4	44.3	44.8	45.5
Pill	16.6	16.5	15.3	15.9	12.9	10.4
IUD	4.1	8.4	15.7	24.1	27.9	30.0
Injectable	-	0.3	0.1	-	0.5	2.4
Norplant	-	-	-	-	0.0	0.0
Vaginal methods	0.3	0.7	0.4	-	0.4	0.1
Condom	1.1	1.3	2.4	-	2.0	1.4
Female sterilization	0.7	1.5	1.5	-	1.1	1.1
Male sterilization	0.1	0.0	0.0	-	0.0	0.0
Any traditional method	1.4	1.6	2.4	3.3	2.3	2.4
Periodic abstinence	0.5	0.6	0.6	-	0.7	0.8
Withdrawal	0.4	0.3	0.5	-	0.7	0.5
Prolonged breastfeeding	-	0.6	1.1	-	0.9	1.0
Other methods	0.3	0.1	0.2	-	0.1	0.1
Not using	75.8	69.7	62.2	52.4	52.9	52.1
Total percent	100.0	100.0	100.0	100.0	100.0	100.0
Number of women	8,012	9,158	8,221	8,406	9,153	13,710

[1] Rates are for the 12-month period preceding the survey.
[2] Rates are for the 36-month period preceding the survey.
Note: A dash (-) indicates that information on the method was not collected or reported.
Source: EFS-80 – Unpublished results
     ECPS-84 –Sayed et al., 1985, Table 9.4
     EDHS-88 – Sayed et al., 1989, Table 6.1
     EMCHS-91 – Abdel-Azeem et al., 1993, Table 8.7
     EDHS-92 – El-Zanaty et al., 1993, Table 5.1
     EDHS-95 – El-Zanaty et al., 1996, Table 5.1

remarkable rise in contraceptive use during the 15-year period between 1980 and 1995 was reflected in a considerable decline in fertility from 5.3 births per woman in 1980 to 3.6 in 1995 (El-Zanaty et al., 1996).

Although Egypt experienced an overall increase in contraceptive use levels during the period between 1980 and 1995, there were not uniform changes in the patterns of use by method. The trend in the family planning method mix shows that the percentage of married women using the pill decreased from 17 percent in 1980 to 10 percent in 1995, while the percent using an IUD increased from 4 percent to 30 percent during the same period. Another switch to more effective methods was evident in the increase of injectable users from 0.5 percent in 1992 to 2.4 percent in 1995.

Table 2 uses data from the 1995 Egypt Demographic and Health Survey (DHS) in looking at differentials in the use of contraception among currently married women in the reproductive ages. Decisions about the variables that are employed in looking at the patterns of contraceptive discontinuation and failure later in this study were based mainly on a consideration of the differentials in this table. Table 2 shows that the pool of users is largely divided between two methods—the pill, which was used by 10 percent of married women in 1995, and the IUD, which was used by 30 percent of women. This study focuses on these two methods in order to ensure a sufficient number of segments of use to derive reliable life tables at the sub-group level.

The table shows considerable variation in the levels of contraceptive use among subgroups. With respect to women's age, IUD use peaked at 35 percent among women in the 25-34 age group, while the proportion using the pill did not vary among women age 25 and over. Contraceptive use was higher among spacers than among limiters for all methods. As expected, family planning use increased rapidly with the number of living children that a woman had, reaching a peak among women with three children.

Urban residents were more likely to use the IUD (36 percent) than rural residents (25 percent). The prevalence of IUD use in Urban Governorates reached 40 percent, while the IUD use in Lower Egypt averaged around 35 percent in both urban and rural areas. In Upper Egypt, a much lower proportion of women (18 percent) was using an IUD, and there was a wider variation in use levels between urban (30 percent) and rural (12 percent) areas. Residential differentials in pill use were similar in pattern to that observed for the IUD.

Looking at the effect of women's education, the differentials clearly vary by method. Increases in the educational level of women were associated with higher levels of IUD use, with the prevalence of use of the IUD reaching its peak (39 percent) among users who had completed the secondary level or higher. In contrast, the level of pill use decreased with the woman's educational level.

Table 2 <u>Current use of family planning methods by background characteristics</u>

Percent distribution of currently married women 15-49 by contraceptive method currently used, according to selected background characteristics, Egypt 1995

Background Characteristics	Pill	IUD	Injec-table	Con-dom	Other modern	Peri-odic absti-nence	Other tradi-tional	Not using	Total percent	Number of women
Age										
Under 25	5.8	19.3	1.9	0.3	0.1	0.3	1.5	70.9	100.0	2,723
25-34	11.5	35.2	2.7	1.0	0.5	0.3	1.6	47.3	100.0	5,092
34-49	11.6	30.6	2.4	2.3	2.6	1.4	1.6	47.4	100.0	5,768
Contraceptive intent										
Spacer	13.8	37.0	3.3	2.0	0.2	1.0	1.8	40.8	100.0	8,737
Limiter	6.4	30.4	1.3	0.3	0.1	0.4	2.0	59.0	100.0	1,996
Number of living Children										
0-1	2.9	13.5	0.5	0.2	0.1	0.4	0.8	81.5	100.0	3,134
2	8.9	39.0	1.6	1.8	0.3	0.9	1.5	46.1	100.0	2,477
3	13.8	40.4	3.7	2.5	1.5	1.4	2.2	34.6	100.0	2,530
4+	13.9	30.7	3.2	1.4	2.4	0.6	1.8	46.0	100.0	5,442
Urban-rural residence										
Urban	10.9	36.3	2.3	2.3	1.8	1.4	1.3	43.6	100.0	6,291
Rural	10.0	24.6	2.5	0.6	0.8	0.3	1.8	59.4	100.0	7,292
Place of residence										
Urban Governorates	8.4	40.2	2.2	2.7	1.8	1.4	1.4	41.9	100.0	3,122
Lower Egypt	12.6	34.7	2.8	1.2	1.6	0.7	1.8	44.6	100.0	5,736
Urban	14.3	34.4	3.0	2.1	2.4	1.6	1.3	40.9	100.0	1,686
Rural	11.9	34.8	2.7	0.9	1.2	0.4	1.9	46.2	100.0	4,050
Upper Egypt	9.1	17.7	2.0	0.8	0.6	0.4	1.5	67.9	100.0	4,725
Urban	12.6	30.3	1.8	1.6	1.3	1.1	1.2	50.1	100.0	1,483
Rural	7.5	11.9	2.1	0.4	0.3	0.1	1.6	76.0	100.0	3,241
Education										
No education	11.0	23.9	2.3	0.6	1.4	0.1	1.4	59.3	100.0	5,788
Some primary	12.2	30.2	3.1	1.2	1.4	0.5	1.8	49.5	100.0	2,666
Primary completed/ some secondary	10.1	32.9	2.3	1.8	1.4	0.9	1.9	48.8	100.0	1,787
Secondary completed/ Higher	8.3	39.0	2.0	2.7	0.9	2.1	1.5	43.5	100.0	3.341
Total	10.4	30.0	2.4	1.4	1.3	0.8	1.6	52.1	100.0	13,583

Note: With regard to contraceptive intent, a <u>limiter</u> is defined as a user who did not want another child at the time of the survey, and a <u>spacer</u> is a user who wanted to delay the next birth by two or more years.

Review of previous studies

In addition to the data on trends and differentials of contraceptive use in Egypt, information is available from a number of studies carried out over the past 15 years on patterns of contraceptive continuation or discontinuation and method switching and failure. Since 1980, life-table techniques have been applied several times in the study of contraceptive use dynamics in Egypt. One of the first studies was based on data from the Egypt Rural Contraceptive Prevalence Survey (Khalifa et al., 1982), and showed that, overall, the continuation rate during

the first year was greater for IUD users than that for pill users (66 percent versus 60 percent, respectively). The median survival time reflected the longer periods of use of the IUD; the median duration of use for the IUD was 33 months versus 24 months for the pill.

Several other studies were undertaken using data from the 1984 Egypt Contraceptive Prevalence Survey (CPS) (Sayed et al., 1985; Sayed and Way, 1985; and Ahmed, 1990). Again these studies found IUD continuation rates to be higher than pill rates. For example, Ahmed (1990) concluded that IUD and pill users had the lowest probability of being at risk of conception, which meant that those methods were the most effective in Egypt in 1984.

Using data from the 1988 DHS, Entwisle and Sayed (1991) obtained estimates of one-year life table failure rates for the pill and IUD of 14 percent and 4 percent, respectively, which were considered to be high relative to previous estimates. Fawzi (1993) also used data from the 1988 EDHS to look at differentials in continuation rates. He found that continuation rates during the first six months following adoption of a method declined at faster rate in urban than rural areas.

Zaghlool and Fawzi (1997) used data from the 1988 and the 1992 DHS surveys to examine trends in discontinuation and failure rates in Egypt. In another study using the 1992 DHS data, El Tawila (1995) found that 29 percent of all users stopped use of their method within one year, and half stopped within two years of adopting a method. By the end of the fifth year, only one-quarter of all users were continuing to use a method without interruption. The median duration of method use among all users was two years. El-Tawila's study also found that the rate of discontinuation of the pill was quite high during the first year of use. The patterns of discontinuation of the condom and periodic abstinence were similar to that of the pill, with the rate of discontinuation also starting out at a very high level. However, for those who continued use of the latter two methods through the first year, the risk reduced dramatically thereafter. Overall, the median duration of use among pill or condom users was about 15 months and that for periodic abstinence was 18 months. One-third of women using the IUD stopped using after two years. The median duration of IUD use slightly exceeded three years, which was shorter than anticipated for this long-term contraceptive.

Although most studies of contraceptive use dynamics have used national-level survey data, Makhloof and Zaghlool (1994) included an examination of continuation rates as part of an effort to evaluate progress in the Clinical Service Improvement (CSI) Project, which was designed to improve family planning service delivery at selected clinics within Egypt. The study obtained data on continuation from other users in addition to CSI clients. The results revealed that about 70 percent of all users included in the study continued using up to the end of the first year, 59 percent to the end of the second year, and 55 percent up to the end of the fourth year of use. IUD users had the highest continuation rates, followed by users of the pill and condom. The mean durations of use for the IUD, pill and condom were found to be 48, 33 and 22 months, respectively. These average durations of use were higher among women obtaining their method from providers within the CSI project than for other women.

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Method switching among Egyptian users also has been examined in a number of studies. For example, Makhlouf and Zaghlool (1994) examined switching behavior among clients obtaining their methods from Clinical Services Improvement outlets during the period 1990-1994. A total of 1,045 "switches" (i.e., changes between methods) were experienced among the CSI client cohort during the four-year period. The net change was in favor of IUD. However, Makhlouf and Zaghlool also found that the switching behavior was associated with higher extended-use failure rates.

Gaafar (1997) analyzed data from the 1992 Egypt DHS and found that, over a four-year period prior to the survey, the proportion of women who did not switch was only 11 percent among pill users and 19 percent among IUD users. Gaafar also looked at the reasons for changing methods. Women who attained all or significant proportions of their desired family size tended to switch to more reliable methods, and this also was the most important factor that affected switching from nonuse to use of a method.

3   Data and Methods

This section describes the data and methodology employed in the study.

Data source

The data used in this study were taken from the responses of ever-married women interviewed in the 1995 DHS, the third round in a series of demographic health surveys carried out in Egypt since 1988. A total of 14,779 women were interviewed in the 1995 DHS.[1] As was the case with earlier rounds of the DHS surveys, the 1995 DHS provides detailed information on family planning knowledge and use as well as on fertility and mortality levels and key maternal and child health indictors at the national and regional levels.

Methodology

The 1995 DHS was the second DHS survey in which use dynamics data were collected using a monthly calendar technique. The calendar format was used to obtain retrospective data on a woman's marital, pregnancy, breastfeeding and contraceptive status on a monthly basis for the period from January 1990 to the date of interview. The calendar provided a framework for resolving inconsistencies in birth dates, breastfeeding durations, and the lengths of segments of contraceptive use or nonuse.

Using the calendar data from the 1995 DHS, it is possible to specify for each respondent segments of contraceptive use and segments of nonuse of contraception during the period covered by the calendar. A segment of use is defined as an uninterrupted period of use of an individual contraceptive method, while a segment of nonuse is an uninterrupted period in which

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[1] For detailed information on the 1995 EDHS sample, see El-Zanaty et al., 1995.

the woman is not pregnant and is not using a contraceptive method. Although the calendar data covered a 69-month period prior to the survey, only a 60-month period is used in this analysis.

The unit of analysis for the study of discontinuation is a segment of use of a particular method of contraception. However, for many women who were still using a method at the time of the survey, the duration of that particular segment of use is unknown. Such segments of use are called censored, and they cannot be dropped from the analysis since this would bias the results. Thus, life-table techniques, which are the appropriate tool for use in the analysis of data containing censored segments, are used in this study.

Life tables were originally developed to study mortality and the expected length of life at different ages. In the sixties, Potter (1966) adopted the life-table technique to study the events that arise during contraceptive use such as discontinuation. Using this technique, discontinuation rates for the population in question are calculated on a month-by-month basis. The rates are then linked together to provide cumulative discontinuation rates, or the proportion discontinuing within a given period, frequently 12 months. Rates of discontinuation also can be calculated separately by the reason for discontinuation, such as failure, or by subsequent behavior, e.g., switching to another method.

In this study, multiple-decrement life tables provide the framework for the analysis of discontinuation by reason for stopping. Discontinuation rates obtained from multiple-decrement life tables are called net rates, and they add up to the total discontinuation rate. It should be noted, however, that the net pregnancy rate cannot be considered a pure measure of failure, and gross failure rates are used in this study to analyze failure, as one of the components of contraceptive use dynamics.

Finally, the investigation of switching behavior in this study is based on the status of users in the month immediately following discontinuation, in conjunction with the reason of discontinuation. It does not take into account the user's status in subsequent months after the discontinuation.

Distribution of segments of use

Table 3 presents the distribution of segments of use during the five-year period before the 1995 DHS by selected background characteristics of the users. All the characteristics displayed in Table 2 relate to the respondent's status at the time of the interview except the method used, the woman's reproductive intention, and the number of living children. The latter variables relate to the time when the respondent started contracepting.

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Table 3 <u>Distribution of segments of use by background characteristics</u>

Distribution of censored and non-censored segments of use during the five-year
period before the survey, by selected background characteristics, Egypt 1995

Background characteristics	Censored segments		Non-censored segments	
	Percent	Number	Percent	Number
Age				
Under 25	23.9	1,076	40.9	1,936
25-34	52.2	2,349	44.7	2,115
35-49	23.9	1,076	14.4	679
Contraceptive intent				
Spacer	20.6	928	54.2	2,565
Limited	79.3	3,571	45.6	2,159
Missing	0.0	2	0.1	5
Number of living children				
0-1	10.9	492	30.3	1,433
2	23.3	1,047	24.0	1,134
3	23.9	1,077	17.0	802
4+	41.9	1,886	28.8	1,360
Urban-rural residence				
Urban	51.8	2,330	46.9	2,220
Rural	48.2	2,171	53..1	2,510
Place of residence				
Urban Governorates	25.3	1,137	20.9	988
Lower Egypt				
Urban	14.4	647	13.6	642
Rural	33.5	1,506	33.9	1,605
Upper Egypt				
Urban	12.1	546	12.5	590
Rural	14.8	665	19.1	905
Education				
No education	36.5	1,641	35.1	1,662
Some primary	20.1	906	18.8	889
Completed primary/some secondary	13.1	591	13.6	641
Completed secondary/higher	30.3	1,363	32.5	1,538
Method				
Pill	22.2	999	42.0	1,986
IUD	63.0	2,836	37.0	1,750
Injectables	4.8	215	5.5	260
Condom	2.9	130	5.3	253
Prolonged breastfeeding	2.8	126	6.5	307
Periodic abstinence	1.4	61	1.5	70
Other	10.4	134	2.2	104
Total	100.0	4,501	100.0	4,730

Note: The <u>age</u> of the women is defined as her age at the time the segment of use began.
Similarly, the <u>number of living children</u> is defined as the number of living children that the
woman had at the time the segment of use began. Contraceptive <u>intent</u> is defined as the
woman's intent with regard to any birth occurring <u>subsequent</u> to a segment of use (e.g., if a
birth was mistimed, the segment of use was considered as undertaken to space a birth while if
the birth was unwanted the segment of use was considered as an effort to limit a birth). For the
open birth interval, the contraceptive intent is based on the woman's current fertility
preference.

Assessment of the quality of the 1995 calendar data

The contraceptive calendar obtains more complete reports of use for periods prior to the survey. However, successful administration of the contraceptive calendar is not an easy task, and there can be significant errors in the collection or recording of the calendar data. Therefore, it was important to evaluate the quality of the calendar data from the 1995 DHS before exploring the patterns of contraceptive discontinuation and switching. The assessment of the quality of the calendar data involved looked at three key issues: (1) heaping on specific durations of use; (2) underreporting of past use; and (3) concealment of contraceptive failure.

* **Heaping on specific durations of use.** Figure 1 shows the distribution of reported durations of use for non-censored (completed) segments and for all segments of use during the period covered by the study. Heaping is notable at the durations of 6, 12, 18, and 24 months, but is most pronounced at the 12-month duration, especially for uncensored segments.

Figure 1
Distribution of segments of use by duration,
Egypt 1995
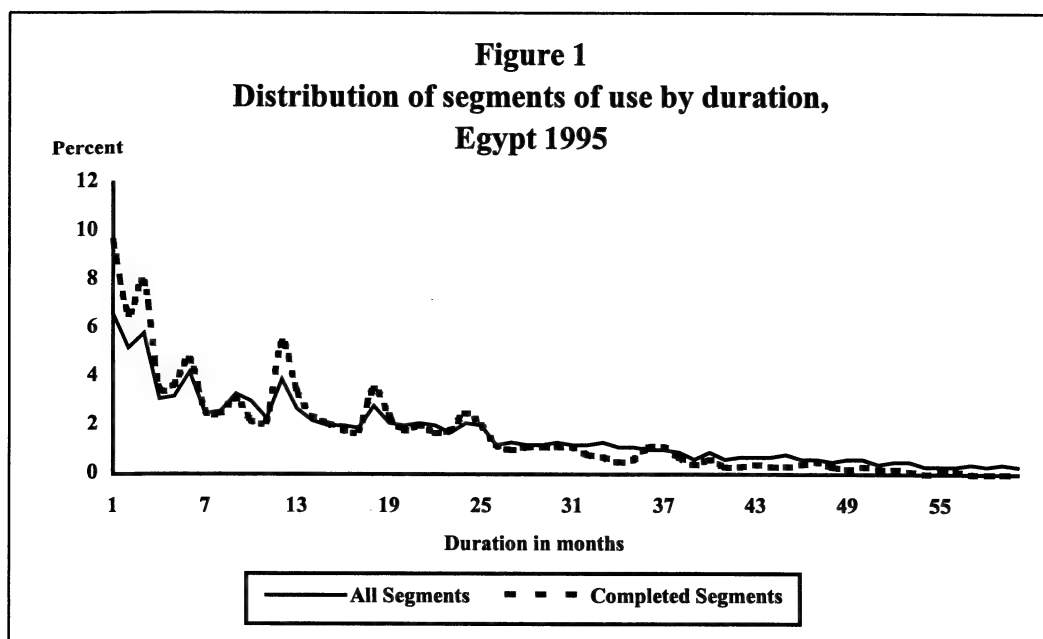
* **Underreporting of past use.** Table 4 compares an estimate of the contraceptive prevalence rate for the time of the 1992 Egypt DHS derived from the 1995 DHS calendar data with the rate reported at the time of the 1992 DHS survey. The estimate of the contraceptive prevalence rate derived from the 1995 calendar data (46 percent) is only slightly lower than the estimate based on current status data from the 1992 DHS. There also is close agreement in the rates for individual methods. The close correspondence between the two sets of estimates suggests that underreporting of segments of use does not pose a significant problem for the analysis of 1995 calendar data.

Table 4 Comparison of calendar and current status estimates of contraceptive prevalence

Percent distribution of currently married women 15-45 by contraceptive method currently used at the time of the 1992 Egypt DHS, based on calendar data for the 1995 Egypt DHS and current status data for the 1992 Egypt DHS

	Basis for estimate	
Method	1995 DHS calendar data	Current status at 1992 DHS
Any method	46.4	48.0
Any modern method	44.7	46.5
Pill	12.9	13.3
IUD	28.4	28.7
Condom	1.2	1.9
Injectables	0.7	0.5
Other modern	1.5	2.1
Any traditional method	1.6	1.6
Prolonged breastfeeding	1.0	0.9
Periodic abstinence	0.6	0.7
Not using	53.6	52.0
Total percent	100.0	100.0

Note: The estimate from the 1995 calendar is based on the average contraceptive prevalence rate for the final quarter of 1992 (i.e., October-December 1992) for women who were currently married and age 15-45 during the quarter.

• **Concealment of contraceptive failure.** The analysis of contraceptive failure will be adversely affected if a disproportionately large number of women report contraceptive failures as desired pregnancies. Table 5, which is designed to look at this issue, contains a cross-classification of completed segments of use, by the main reason that the user had for stopping use and the pregnancy/contraceptive status in the month after discontinuation. These data permit an examination of the extent to which women who said that they had stopped using because they wanted to become pregnant may have been misreporting a contraceptive failure as an intended pregnancy. Overall, 20 percent of the women who stopped using because they wanted another child actually became pregnant in the month immediately following the contraceptive discontinuation. This figure falls within the expected range, suggesting that there was little discernible tendency to misreport failures as desired pregnancies. In addition, among women who discontinued use for other reasons, 8 percent reported that they became pregnant in the month following the termination. Again, this figure is low and does not indicate a tendency to report contraceptive failures as discontinuations for other reasons (Curtis and Hammerslough, 1995).

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Table 5   Status in month following discontinuation by reason for discontinuation

Distribution of discontinued segments of use by reason for discontinuation and status in the month immediately following discontinuation, Egypt 1995

Reasons for discontinuation		Status in month after discontinuation				
	Pregnant	Termination	Not using method	Using another method	Total	Percentage of exposed women who became pregnant
Contraceptive failure	593	20	0	0	613	96.7
Desire to get pregnant	220	0	870	0	1,090	20.2
Other reasons	146	0	1,707	1,173	3,026	7.9
Total	959	20	2,577	1,173	4,730	27.0

Note: Exposed women are former users who were not using another method of contraception in the month following discontinuation of their original method (i.e., the denominator for the percentage includes women who experienced a termination and who were not using any method).

4   Levels and Differentials in Contraceptive Discontinuation

When levels of contraceptive prevalence are rising, as is the case in Egypt, the contraceptive discontinuation rate is considered to be an important indicator of the success of the family planning program (Fathonah, 1996). The discontinuation rates derived from the calendar data in the 1995 DHS and shown in Table 6 are 12-month and 24-month cumulative discontinuation rates; they represent the percentage of users who stop using within 12 months and 24 months of adopting a method, respectively. In addition, the median duration of use is provided for each of the selected methods. This median represents the duration by which 50 percent of users stop using the method. The rates are presented separately for all methods and for the following five individual methods: pill, IUD, injectables, condom and prolonged breastfeeding. The largest number of segments of use was found for the pill, followed by the IUD. A considerably smaller number of segments were found for the other methods.

Discontinuation rates by method

The results in Table 6 indicate that 31 percent of all users of contraceptive methods discontinued within the first year of use, and 51 percent discontinued within the first two years. IUD users have the lowest discontinuation rates: 15 percent during the first year and 34 percent during the first two years. Nearly half of pill users and 53 percent of users of injectables discontinued within the first year of use, and around 7 in 10 percent of users stopped using the method at the end of two years. Condom users had the highest discontinuation rate during the first year (56 percent), while users of prolonged breastfeeding had the highest 24-month discontinuation rate (90 percent).

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Table 6 Contraceptive discontinuation by method

Life-table discontinuation rates and median durations of use by method, Egypt, 1995

Method	12-month rate (percent)	24-month rate (percent)	Median duration (months)
Pill	47.2	66.2	13.0
IUD	14.5	33.8	36.2
Injectables	53.4	70.4	10.7
Condom	56.1	68.5	10.8
Prolonged breastfeeding	31.4	90.1	17.3
All methods	30.5	50.7	23.7

The median durations of use shown in Table 6 reflect the impact of the discontinuation rates. The median duration of use of the IUD was more than 36 months, while for pill users, it was much shorter (13 months). Fifty percent of injectable and condom users discontinued within 11 months of starting use. Regarding prolonged breastfeeding users, the table shows that 50 percent discontinued after around 17 months of use.

Discontinuation rates for the IUD and pill according to background characteristics

Differentials in discontinuation patterns by background characteristics for the IUD and the pill, the two most frequently used methods in Egypt, are examined in Table 7. Differentials in the rates of discontinuation of other methods are not considered because of the small number of segments reported by the women in the survey.

In the case of both the IUD and the pill, users under age 25 tended to discontinue using their method earlier than older users. Variations in the rates of discontinuation among older users of both methods were minimal during the first year of use; however, the 24-month discontinuation rates were higher for women in the 25-34 age group than women age 35-49. Spacers were likely to discontinue using either method earlier than limiters. In general, discontinuation rates decreased with the number of living children for both methods.

Rural users discontinued both the IUD and the pill earlier than urban users. Considering place of residence, discontinuation rates for both methods were higher in both urban and rural areas in Upper Egypt than in Lower Egypt. No marked variations were evident in the 12-month discontinuation rates across educational subgroups for either method; however, the 24-month rates were somewhat higher among women with at least a primary education than other women in the case of the IUD and among women with at least a secondary education than among other women in the case of the pill.

Table 7 <u>Contraceptive discontinuation rates for the IUD and pill by background characteristics</u>

Life table discontinuation rates and median durations of use for the IUD and pill by selected background characteristics, Egypt 1995

	IUD			Pill		
	Discontinuation rate (percent)			Discontinuation rate (percent)		
Background characteristics	12-month	24-month	Median duration (months)	12-month	24-month	Median duration (months)
Age						
Under 25	21.0	49.2	24.2	55.4	76.9	11.0
25-34	11.1	28.3	44.9	43.3	62.3	15.2
35-49	11.2	17.6	>6	42.0	55.3	19.2
Contraceptive intent						
Spacer	22.5	56.4	21.7	59.9	81.9	9.3
Limiter	9.2	18.1	>6	39.7	55.1	18.5
Number of living children						
0-1	24.9	65.3	19.1	65.3	87.1	6.9
2	13.8	32.8	36.3	47.7	71.1	12.6
3	9.8	20.6	45.7	42.9	58.6	17.5
4+	10.7	20.3	>6	39.9	55.9	18.0
Urban-rural residence						
Urban	12.2	31.1	36.8	43.2	62.0	15.3
Rural	17.2	36.8	35.4	50.3	69.5	11.9
Place of residence						
Urban Governorates	11.1	30.1	37.8	46.8	64.8	13.3
Lower Egypt						
Urban	10.6	29.0	38.7	38.8	57.8	17.7
Rural	16.1	35.0	36.8	51.3	70.1	11.7
Upper Egypt						
Urban	16.5	35.9	32.9	43.1	62.7	14.9
Rural	20.4	42.1	28.4	48.9	68.6	12.5
Education						
No education	15.0	30.5	43.0	45.8	65.2	13.3
Some primary	12.9	29.1	44.3	46.6	63.6	14.0
Comp. primary/some secondary	13.5	37.7	31.9	46.5	65.0	13.1
Comp. secondary/ higher	15.3	37.9	32.2	50.9	71.2	11.8
Total	14.5	33.8	36.2	47.2	66.2	13.0

5   Reasons for Discontinuation

Understanding the reasons that women give for discontinuing use of a contraceptive method is important. This section presents information obtained in the 1995 DHS on the main reasons that users had for stopping use of contraceptive methods. The investigation is limited to 12-month period following adoption of the method. The reasons are classified into five mutually exclusive and exhaustive categories: contraceptive failure, desire to get pregnant, side effects, method-related reasons, and other reasons. The category "method-related reasons" includes health concerns, lack of availability of the method, desire for a more effective method, and cost and inconvenience of the method. The "other" category includes reasons such as partner disapproved, infrequent sex, sub-fecundity, separation, widowhood or divorce as well as cases

in which the woman was not sure of the reason. Net discontinuation rates for each reason were estimated from a multiple-decrement life table and, consequently, are independent on each other. Accordingly, the reason-specific discontinuation rates add up to the total discontinuation rate at each duration (Curtis and Hammerslough, 1995).

Discontinuation rates by reason and method

Table 8 shows that the most frequently reported reason for discontinuing use of a method was side effects, while a desire to get pregnant was reported least often as the reason for discontinuation. Overall, the 12-month discontinuation rate due to side effects was 13 percent, the rate due to a desire to get pregnant was 4 percent, and the rate due to contraceptive failure was 4 percent.

Table 8 Contraceptive discontinuation by reason for discontinuation

Life-table 12-month discontinuation by reason for discontinuation and method, Egypt 1995

Method	Contraceptive failure	To get pregnant	Side effects	Method-related reasons	Other reasons	Total
Pill	6.6	6.9	20.5	2.3	10.9	47.2
IUD	1.4	2.8	8.5	0.2	1.7	14.5
Injectables	0.7	2.4	29.3	8.4	12.7	53.4
Condom	10.3	5.6	3.0	18.4	18.8	56.1
Prolonged breastfeeding	4.7	0.5	0.3	17.0	9.4	31.9
Total	3.9	4.2	12.5	3.2	6.7	30.5

The reasons for discontinuation vary somewhat according to method. In the first year of use, side effects was the main reason for discontinuing the pill, the IUD, and injectables. Condom users reported problems with the method other than side effects as well as other factors including partner disapproval and lack of exposure. Method-related reasons were also a primary factor in discontinuing prolonged breastfeeding.

Discontinuation rates for the IUD by reason and background characteristics

Table 9 gives the 12-month discontinuation rates for the IUD by reason for discontinuation and background characteristics of the users. Side effects was a major cause of discontinuation across all subgroups. The discontinuation rate due to side effects rates was higher among women under age 25, spacers, women with fewer than 2 children, rural women and women with less than a primary education than among other women.

Table 9   Discontinuation rates for the IUD by reason and background characteristics

Life-table 12-month discontinuation rates for the IUD by reason for discontinuation, according to selected
background characteristics, Egypt 1995

Background characteristics	Contraceptive failure	To get pregnant	Side effects	Method-related reasons	Other reasons	Total
Age						
Under 25	1.4	5.3	11.7	0.3	2.4	21.0
25-34	1.4	1.8	6.5	0.1	1.4	11.1
35-49	1.3	0.7	8.3	0.0	0.9	11.2
Contraceptive intent						
Spacer	1.7	6.8	11.2	0.3	2.6	22.5
Limiter	1.2	0.1	6.8	0.1	1.1	9.2
Number of living children						
0-1	2.1	7.8	12.5	0.3	2.1	24.9
2	1.2	2.5	8.0	0.2	1.8	13.8
3	1.9	0.9	6.0	0.0	1.0	9.8
4+	0.7	0.6	7.7	0.1	1.6	10.7
Urban-rural residence						
Urban	1.7	2.4	7.1	0.1	0.9	12.1
Rural	1.0	3.3	10.1	0.2	2.6	17.2
Place of residence						
Urban Governorates	1.9	2.0	6.4	0.2	0.6	11.1
Lower Egypt						
Urban	1.5	2.2	6.1	0.0	0.9	10.6
Rural	0.9	3.6	9.2	0.2	2.2	16.1
Upper Egypt						
Urban	1.3	3.4	10.1	0.2	1.5	16.5
Rural	1.4	2.5	12.8	0.1	3.5	20.3
Education						
No education	0.9	1.9	10.0	0.1	2.1	15.0
Some primary	0.4	1.8	9.5	0.0	1.4	13.0
Comp. primary/some secondary	1.0	2.7	7.1	0.9	1.8	13.5
Completed secondary/higher	2.4	4.2	7.3	0.0	1.4	15.3
Total	1.4	2.8	8.5	0.2	1.7	14.5

Discontinuation of the IUD due to method failure was somewhat more common among spacers, urban women, especially those living in the Urban Governorates, and highly educated women than among other women. Not unexpectedly, the probability of discontinuing the IUD to get pregnant was highest among women under age 25, spacers, and women with fewer than two children.

Discontinuation rates for the pill by reason and background characteristics

Table 10 gives discontinuation rates during the first year of use for the pill by reason and background characteristics. The patterns are very similar to those observed in the case of the IUD. The probability of discontinuing due to side effects were greatest among women under

age 25, spacers, women with fewer than 2 children, rural women, especially those in rural Upper Egypt, and women who never attended school.

Table 10 Discontinuation rates for the pill by reason and background characteristics

Life-table 12-month discontinuation rates for the pill by reason for discontinuation, according to background characteristics, Egypt 1995

Background characteristics	Contraceptive failure	To get pregnant	Side effects	Method-related reasons	Other reasons	Total
Age						
Under 25	7.1	13.3	25.8	2.1	7.1	55.4
25-34	7.1	4.6	18.2	2.6	10.8	43.3
35-49	4.3	0.8	16.6	2.0	18.4	42.0
Contraceptive intent						
Spacer	8.2	15.7	24.4	2.6	7.8	58.7
Limiter	5.4	1.3	18.1	2.2	12.7	39.7
Number of living children						
0-1	7.9	18.6	26.1	3.3	9.3	65.3
2	6.2	10.1	19.8	2.3	9.2	47.6
3	6.3	2.8	20.0	1.9	11.9	42.9
4+	6.2	1.2	18.3	2.1	11.9	39.9
Urban-rural residence						
Urban	5.7	7.0	17.4	2.5	10.6	43.2
Rural	7.3	6.8	22.9	2.3	11.1	50.3
Place of residence						
Urban Governorates	6.1	7.5	18.0	3.7	11.5	46.8
Lower Egypt						
Urban	3.3	8.4	12.5	1.8	12.8	38.8
Rural	8.6	7.2	19.7	2.4	13.4	51.3
Upper Egypt						
Urban	7.4	5.1	21.6	1.6	7.3	43.1
Rural	5.4	6.3	27.5	2.0	7.7	48.9
Education						
No education	7.0	5.4	23.0	1.7	8.7	45.8
Some primary	7.2	7.3	20.4	2.3	9.3	46.6
Comp. primary/some secondary	5.7	7.9	19.9	3.1	9.9	46.5
Completed secondary/higher	5.7	8.8	16.6	3.1	16.7	50.9
Total	6.6	6.9	20.5	2.3	10.9	47.2

The rates of discontinuation of the pill due to method-related reasons other than side effects did not vary greatly across subgroups. However, there were notable variations in the rates of discontinuation due to other reasons. Women age 35 and older, limiters, and highly educated women were more likely than other women to cite other reasons for discontinuing use.

Discontinuation of the pill due to method failure was highest among women with 2 or fewer children, rural women, and women with less than a primary education. Not surprisingly, discontinuation due to the desire to get pregnant was highest among users under age 25, spacers, and women with fewer than two children.

6   Contraceptive Switching

Information on contraceptive switching behavior is of particular interest to family planning programs. Women who are in need for contraception and discontinue the use of a method in order to switch to another method or who abandon use entirely place themselves at risk of an unwanted pregnancy. An analysis of information from the 1995 DHS on the behavior following the discontinuation of use of contraception provides insight into the extent to which women in Egypt are exposed to these risks. The definition of switching behavior used in this study is based on the status of the user in the month immediately following discontinuation, in conjunction with the information on the reason for discontinuation. Multiple-decrement life tables are used in the analysis of switching behavior. The analysis focuses on women who switch or abandon use.

Status after discontinuation by method

Table 11 shows life-table 12-month discontinuation rates according to the status of the woman in the month following discontinuation. The first category, no need for contraception, includes users who discontinued due to failure, a desire to get pregnant, perceived infecundity, menopause, separation or widowhood, and infrequent sex.

Overall, 9 percent of all users discontinued use during the first 12 months and switched to another method, 8 percent abandoned use, and 12 percent were considered as not in need for contraception. The rate of switching to another method (modern and traditional) was higher than the rate of abandoning use in the case of IUD, condom, and prolonged breastfeeding. However, it should be noted that the difference between switching rates and abandoning rates was quite small for the IUD, while for the condom and prolonged breastfeeding, the differences were quite large. The rate of abandoning use was highest for pill users, followed by injectable users.

Table 11   Discontinuation rates by status after discontinuation and method

Life table 12-method discontinuation rates by status in the month following discontinuation and method, Egypt 1995

Method	No need for contraception	Switch to modern method	Switch to traditional method	Abandon use	Other	Total
Pill	21.7	1.4	0.7	12.8	1.6	47.2
IUD	5.3	4.3	0.2	4.2	0.4	14.5
Injectable	9.2	18.3	1.4	23.3	1.3	53.4
Condom	18.4	23.8	3.4	8.8	1.7	56.1
Prolonged breastfeeding	5.2	17.8	0.6	8.3	0.0	31.9
Total	11.9	8.7	0.7	8.2	0.9	30.5

Note : It is assumed that there was no need for contraception it the segment ended for the following reasons: failure, wanted to get pregnant, infrequent sex, separation/widowhood, and infecund/menopausal. Users who discontinue use for other reasons and do not adopt a method in the month following use are considered to have abandoned use.

Status of IUD and pill users after discontinuation

Tables 12 and 13 present discontinuation rates by the status of the user after discontinuation and background characteristics for IUD and pill users. With respect to the IUD, the results in Table 11 indicate that the highest rates of switching to another method (modern or traditional) were found among women under age 25, spacers, women with 2 or fewer children and rural women in Upper Egypt. In general, the rates of abandoning use were higher among younger women, spacers, women with fewer than 2 children, and rural women from Upper Egypt.

Table 12 Discontinuation rates for the IUD by status after discontinuation and background characteristics

Life table 12-month discontinuation rates for the IUD by status after discontinuation, according to background characteristics, Egypt 1995

Background characteristics	No need for contraception	Switch to modern method	Switch to traditional method	Abandon use	Other	Total
Age						
Under 25	8.2	5.4	0.5	6.2	0.7	21.0
25-34	4.1	3.7	0.1	3.0	0.2	11.1
35-49	2.7	4.1	0.1	3.9	0.5	11.2
Contraceptive intent						
Spacer	10.1	4.9	0.6	6.4	0.5	22.5
Limiter	2.1	4.0	0.0	2.8	0.3	9.2
Number of living children						
0-1	11.4	6.0	0.8	6.3	0.4	24.9
2	5.2	4.2	0.2	3.9	0.4	13.8
3	3.4	2.6	0.0	3.2	0.4	9.8
4+	2.2	4.4	0.0	3.7	0.5	10.7
Urban-rural residence						
Urban	4.6	3.8	0.3	3.3	0.1	12.1
Rural	6.1	4.9	0.2	5.3	0.7	17.2
Place of residence						
Urban Governorates	4.4	3.7	0.2	2.7	0.2	11.1
Lower Egypt						
Urban	4.2	3.4	0.4	2.5	0.0	10.6
Rural	6.1	4.4	0.2	4.6	0.7	16.1
Upper Egypt						
Urban	5.4	4.8	0.5	5.6	0.2	16.5
Rural	5.9	6.3	0.0	7.4	0.8	20.3
Education						
No education	4.1	4.9	0.1	5.0	0.9	15.0
Some primary	3.1	5.0	0.0	4.5	0.4	13.0
Comp. primary/some secondary	5.0	4.0	0.4	4.1	0.0	13.5
Completed secondary/higher	7.6	3.7	0.5	3.4	0.2	15.3
Total	5.3	4.3	0.2	4.2	0.4	14.5

Note: It is assumed that there was no need for contraception if the segment ended for the following reasons: failure, wanted to get pregnant, infrequent sex, separation/widowhood, and infecund/menopausal. Users who discontinue use for other reasons and do not adopt a method in the month following use are considered to have abandoned use.

In general, the variations in switching rates for the pill were quite minor across subgroups. The highest rates are observed among women under age 25, women with 2 or fewer children, women living in the Urban Governorates, and women who had completed secondary education. The variation of the rates at which women abandoned use were also quite small for the most part. Women in Upper Egypt had the highest rates overall, followed by spacers, women under age 25, and women with no education.

Table 13 <u>Discontinuation rates for the pill by status after discontinuation and background characteristics</u>

Life table 12-month discontinuation rates for the pill by status after discontinuation, according to background characteristics, Egypt 1995

Background Characteristics	No need for contraception	Switch to modern method	Switch to traditional method	Abandon use	Other	Total
Age						
Under 25	24.6	12.7	0.6	15.8	1.5	55.4
25-34	20.2	9.8	0.5	10.8	2.0	43.3
35-49	19.7	7.7	1.0	12.7	0.8	42.0
Contraceptive intent						
Spacer	28.8	10.9	0.6	16.4	2.0	58.7
Limiter	16.8	10.3	0.7	10.6	1.4	39.7
Number of living children						
0-1	31.6	15.9	0.9	14.9	1.9	65.3
2	23.1	18.2	1.0	14.0	1.4	47.6
3	18.0	9.1	0.9	13.8	1.3	42.9
4+	17.5	9.7	0.3	10.6	1.8	39.9
Urban-rural residence						
Urban	20.2	9.8	0.9	11.2	1.1	43.2
Rural	22.8	10.9	0.5	14.1	2.0	50.3
Place of residence						
Urban Governorates	22.1	14.1	0.1	9.5	1.1	46.8
Lower Egypt						
Urban	22.0	8.3	0.6	7.3	0.6	38.8
Rural	26.8	11.6	0.7	10.6	1.5	51.3
Upper Egypt						
Urban	16.1	6.2	2.2	17.0	1.6	43.1
Rural	16.8	9.9	0.2	19.2	2.8	48.9
Education						
No education	19.2	9.2	0.3	15.3	1.9	45.8
Some primary	20.0	10.9	0.0	13.9	1.7	46.6
Comp. primary/some secondary	20.4	11.0	1.2	11.4	2.5	46.5
Comp.secondary/higher	28.6	11.9	1.6	8.2	0.7	50.9
Total	21.7	10.4	0.7	12.8	1.6	47.2

Note: It is assumed that there was no need for contraception if the segment ended for the following reasons; failure, wanted to get pregnant, infrequent sex, separation/widowhood, and infecund/menopausal. Users who discontinue use for other reasons and do not adopt a method in the month following use are considered to have abandoned use.

7 Contraceptive Failure

Contraceptive discontinuation due to method failure is of particular interest because it results directly in unwanted pregnancy (Sambisa, 1996). The net failure rates presented in Table 8 are not appropriate for comparing methods use failure across methods or subgroups because they are affected by discontinuation rates for other reasons. Gross failure rates obtained from an associated single-decrement life table in which discontinuations for reasons other than failure are treated as censored observations, are more appropriate for such comparisons (Curtis and Hammerslough, 1995). Gross failure rates are theoretical rates, i.e., they represent the failure rates that would be expected if failure was the only reason for discontinuing use.

Contraceptive failure by method

Table 14 shows the 12-month gross failure rates and their 95-percent confidence intervals for the selected methods. At the time of the 1995 DHS, failure rates were lowest for injectables (1 percent) and IUD (2 percent), higher for prolonged breastfeeding (5 percent) and pill (9 percent), and highest for condom (16 percent). The differences between the failure rates for the methods are statistically significant.

Table 14   Contraceptive failure rates by method

Life-table 12-month gross failure rates and 95-percent
confidence intervals by method, Egypt 1995

Method	Failure rate (percent)	95 percent confidence interval Lower bound	95 percent confidence interval Upper bound
Pill	9.1	9.0	9.1
IUD	1.5	1.5	1.5
Injectable	0.8	0.7	0.8
Condom	16.3	16.1	16.4
Prolonged breastfeeding	5.4	5.4	5.5
Total	4.2	4.2	4.3

Failure rates by background characteristics

Table 15 shows the 12-month gross failure rates and 95-percent confidence intervals for pill and IUD by background characteristics. The failure rates for both methods decreased with age. The differences between the rates for the various age groups are statistically significant, expect for the difference between the rates for pill users in the 25-34 and 35-49 age groups. The results in Table 15 also indicate that failure rates for both the pill and the IUD were significantly higher for spacers and women with small families. Rural women had higher failure rates for the pill, especially women in rural Lower Egypt. In contrast, urban women had higher failure rates for the IUD. With respect to education, failure rates for the pill were somewhat higher for

women with less than a primary education. In the case of the IUD, failure rates were somewhat higher among women with a secondary or higher education than other women.

Table 15 Contraceptive failure rates by method and background characteristics

Life table 12-month gross failure rates and 95-percent confidence intervals by method, according to selected background characteristics, Egypt 1995

Background characteristics	IUD			Pill		
		95 percent confidence interval			95 percent confidence interval	
	Failure rate (percent)	Lower bound	Upper bound	Failure rate (percent)	Lower bound	Upper bound
Age						
Under 25	1.5	1.5	1.6	10.8	10.7	10.9
25-34	1.4	1.4	1.5	9.1	9.1	9.2
35-49	1.4	1.4	1.5	5.9	5.9	6.0
Contraceptive intent						
Spacer	1.8	1.9	1.9	12.5	12.4	12.6
Limiter	1.2	1.2	1.2	7.1	7.0	7.1
Number of living children						
0-1	2.4	2.3	2.4	13.5	13.4	13.6
2	1.3	1.3	1.3	8.5	8.4	8.5
3	1.9	1.9	2.0	8.0	7.9	8.1
4+	0.7	0.7	0.7	8.2	8.2	8.3
Urban-rural residence						
Urban	1.8	1.8	1.8	7.6	7.6	7.7
Rural	1.1	1.1	1.1	10.2	10.1	10.3
Place of residence						
Urban Governorates	2.0	2.0	2.1	8.8	8.7	8.9
Lower Egypt						
Urban	1.5	1.5	1.6	4.5	4.4	4.5
Rural	1.0	1.0	1.0	12.2	12.1	12.3
Upper Egypt						
Urban	1.4	1.4	1.5	9.5	9.4	9.6
Rural	1.6	1.5	1.6	7.3	7.2	7.4
Education						
No education	1.0	1.0	1.0	9.5	9.5	9.6
Some primary	0.0	0.0	0.0	9.4	9.3	9.5
Comp. primary/some secondary	1.1	1.1	1.1	8.1	8.0	8.2
Comp. secondary/higher	2.6	2.5	2.6	8.4	8.3	8.5
Total	1.5	1.5	1.5	9.1	9.0	9.1

8   Summary and Conclusions

This study was intended to provide some insights into contraceptive use dynamics in Egypt, particularly for the IUD and the pill, the most widely adopted methods in Egypt. The study showed that the IUD, which has a higher prevalence rate than the pill, also has the lowest discontinuation rate and the longest median duration of use. In general, discontinuation rates for both the pill and the IUD were higher among young users, spacers, users of low parity, and women in rural areas.

Like most studies on discontinuation, side effects were found to be the main reason for discontinuation, especially for modern methods, while failure was most common for traditional methods. Reasons of discontinuation was found to vary across sub-groups of users background characteristics. Groups who were most likely to discontinue due to side effects included older women, limiters, women living in rural areas, and women with no education.

The study also considered the status of users in the month following discontinuation in order to obtain a better understanding of the behavior of discontinuers. Overall, around 1 in 11 users stopped using their method during the first year of use and switched to another method. The majority of those who switched to another method chose a modern method. The study also found that 8 percent of users discontinued use without immediately adopting another method although they were still in need of contraception. With regard to specific methods, injectable users had the highest rates of abandoning use and the condom, the highest rates of switching. With regard to the pill and the IUD, pill users were more likely to abandon use than to switch methods. Among IUD users, the probability of switching or abandoning use was almost equal. Among IUD discontinuers, higher rates of both switching and abandoning use were experienced by younger women, spacers, women living in rural areas, and women of lower level of education. Variations in the rates of switching or abandoning use were much less marked among women discontinuing use of the pill.

Finally, gross failure rates were calculated in this study to investigate the differentials between method use effectiveness. The rate was highest for the condom. Rates for the injectable and the IUD were lower than for the pill and prolonged breastfeeding.

Overall, the results suggest that the family planning program in Egypt must pay greater attention to improving the quality of services, particularly the support that is offered to women who experience side effects while using a method. Although many of the women who discontinue use switch to other methods, rates of abandoning use are substantial, particularly in the case of injectables and the pill. This suggests that there is a need to broaden the options of modern effective methods available to couples. Outreach and education programs are needed to target certain subgroups, especially rural and less educated women, in order to reduce the overall levels of discontinuation.

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Women's Empowerment and Contraceptive Use

by

Sunita Kishor

The Programme of Action adopted at the International Conference on Population and Development in held in Cairo in 1994 emphasized the central role of women's empowerment for continuing demographic change in the developing world (United Nations, 1995). Empowerment literally means 'to invest with power'. When used in the context of women's lives, it often refers to women's increased control over decision-making, economic self-reliance, and legal rights to equal treatment, inheritance and protection against all forms of discrimination (Germaine and Kyte, 1995; and United Nations, 1995).

There is little research on the precise nature of the relationship between different aspects of women's empowerment and demographic outcomes. This is in part due to the fact that, until recently, data on women's empowerment were not generally collected along with demographic data. Instead, most demographic research employed variables such as women's education and employment status to proxy empowerment levels.

Information on women's status issues collected as part of the 1995 Egypt Demographic and Health Survey (DHS) helps to fill this gap in research because it allows the definition of direct measures of empowerment and demographic variables of interest for the same sample of women. In this paper, data from the 1995 DHS are used to define two separate measures of women's empowerment: women's participation in household decision-making and women's freedom of movement. A discussion of the correlates of these two indicators of women's empowerment is then presented. Finally, the relationship between the two indicators of women's empowerment to women's current use of contraception and their contraceptive need status is explored.

1   Data

The women's status module of the 1995 DHS provides information on a range of questions central to the lives of Egyptian women including the spouse selection process, marriage costs, post-marriage residential arrangements, intra-household relationships and decision-making, past and current labor force participation and earnings control, freedom of movement, and domestic violence. This wealth of information is available in addition to information on other topics of relevance to women's status and empowerment collected in the core DHS questionnaire such as women's education, media exposure, age at marriage, number of children, and household living standards. These data, along with the extensive information provided in the survey on women's contraceptive status and fertility intentions, are used in this paper to explore both the factors which contribute to greater empowerment for women and the association between increased empowerment and the need for and use of contraception.

The 1995 DHS surveyed a total of 14,779 ever married women aged 15-49. However, the women's status information was obtained only from about half of these women (7,123). Among the women administered the women's status module, 6,599 (93 percent) were currently married. This paper is restricted to the subsample of currently married women since the questions on household decision-making on which one of the indicators of women's empowerment is based, and on women's current contraceptive use status were asked only of currently married women.

2   Measures of Empowerment

This paper considers two critical aspects of women's empowerment: control over decision-making and freedom of movement. Control over decision-making is fundamental to the concept of empowerment. Women should, at a minimum, have a role in decision-making in the many roles that women play (daughters, wives, mothers, workers, etc.) in various arenas in which they live their lives (the home, the work place, the community). As daughter, mother, wife, or worker, at home, at the work place, or in the community, a woman who has a greater say in matters that affect her is more empowered than one who does not.
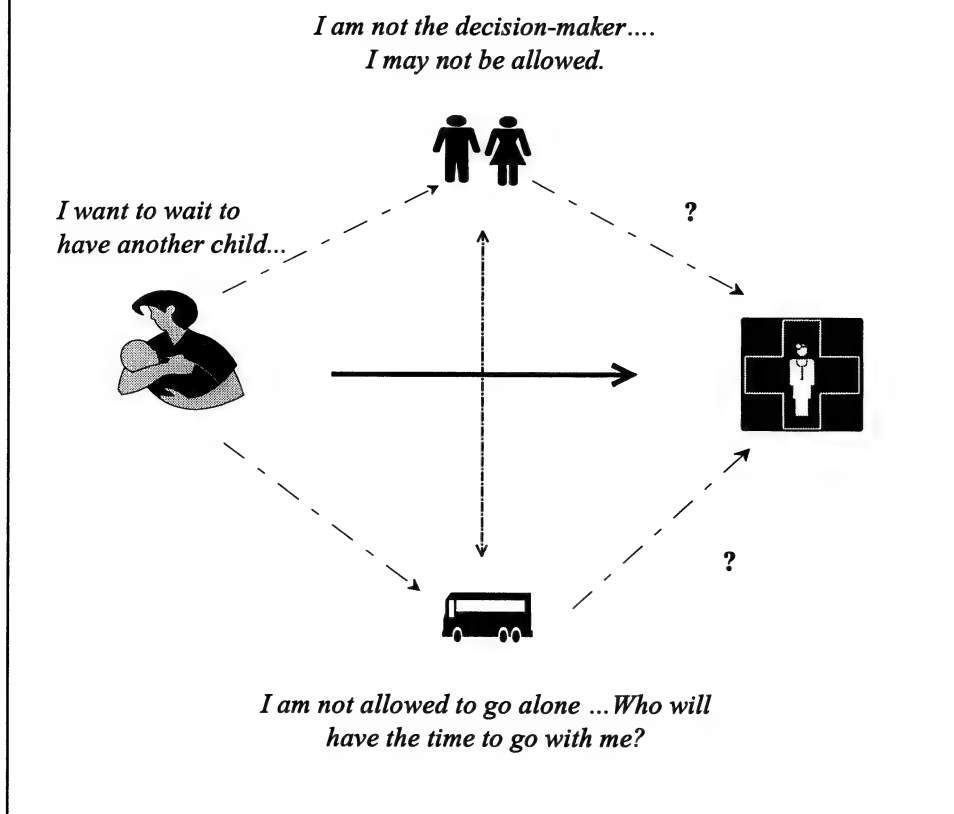
Similarly, freedom of movement can be considered a fundamental measure of women's empowerment. Indeed, if women are to be in control of their own lives, their ability to enter different physical spaces as and when necessary is critical. If persons other than the women themselves determine where they can and cannot go, many roles and arenas of functioning may be closed to women.

An examination of women's degree of control over decision-making and their freedom of movement are of importance not only as measures of women's empowerment, but also because they are directly relevant to population and reproductive health programs. Apart from a few programs which provide door-to-door delivery of information, contraceptives, and health services, most population and reproductive health programs depend upon the women themselves to come to a facility for services. As shown in Figure 1, a woman who wants to get contraception may or may not be in a position to directly access the provider (i.e., follow the thick line). The 1995 Egypt DHS obtained information that can be used to assess both women's control over decision-making and their freedom of movement.

Control over decision-making index

In order to obtain insights into the household decision-making process, currently married women were asked in the 1995 DHS "Who has the final say in your family on..." for each of seven different types of decisions. Table 1 gives the distribution of women by the person(s) whom they said had the final say for each type of decisions. In areas other than food, only a small proportion of women said that they alone had the final say in any decision. Indeed, in terms of having a final say alone in any area, the majority of women reported their husbands alone had the final say in four of the seven areas. Especially notable is that 1 in 5 women said that their husbands had the final say in the decision to have another child. Although women did not see themselves as having the final say in many of the decisions, the range of women participating in

Figure 1
Alternative pathways through which women access services

*I am not the decision-maker....
I may not be allowed.*

*I want to wait to
have another child...*

?

?

*I am not allowed to go alone ...Who will
have the time to go with me?*

Table 1   Household decision-making

Percent distribution of currently married women by person who makes specific household decisions, Egypt 1995

| | Person who makes decision | | | | | |
Decision	Respondent	Respondent and husband	Husband	Other	Not applicable/ missing	Total
Visits to friends/family	7.8	32.0	57.7	1.9	0.6	100.0
Budget	14.1	37.2	40.1	8.5	0.1	100.0
Having another child	3.6	73.7	17.1	0.3	5.3	100.0
Use of contraception	13.3	65.3	7.6	0.3	13.5	100.0
Children's education	3.4	61.7	19.7	0.5	14.6	100.0
Children's medicine	26.0	50.1	16.5	1.3	6.1	100.0
Food cooked	68.5	17.7	5.2	8.2	0.4	100.0

Figure 2
Percent of women who participate in household decision-making, by type of decision, Egypt 1995

Type of decision	Percent
Food cooked	80
Use of contraception	79
Having another child	77
Children's medicine	76
Children's education	65
Budget	51
Visits to friends/family	40
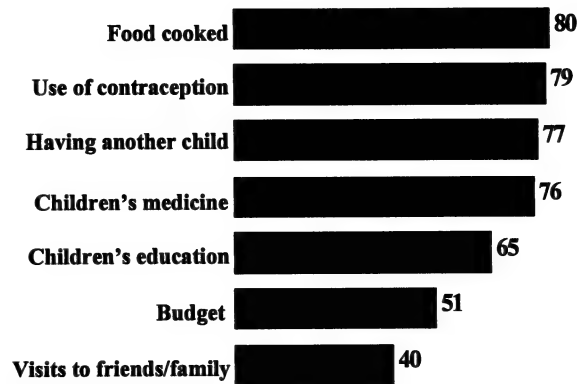
the final decision (either alone or jointly with their husbands) varied from about 40 to 86 percent (Figure 2).

From an empowerment perspective, it is important that women have decision-making power in as many areas that effect their lives as possible. Therefore, in order to better capture the degree of control that DHS respondents had over their lives, an index was constructed based on the number of the areas in which the women reported that they participated in making decisions. The value of the index of decision-making for each woman is the total number of decisions in which the woman, **alone** or **jointly**, had the final say. On this index of decision-making, a woman is least empowered if she had an index value of 0 and most empowered if she has an index value of 7. As Table 2 show, on average, women participated in about five of the seven decisions; 40 percent of women participate in six or more decisions, and less than 10 percent participate in only one or no decision. The value of the Cronbach-α for this index is 0.73 which indicates a relatively high level of cohesion among the items that make up this index.[1]

---

[1]   The Cronbach-α coefficient, which is traditionally used to measure the reliability of an index reflects how well the different items that make up the index cohere together. The higher the Cronbach-α coefficient is for an index the better is the internal cohesion of the items of which the index is constructed.

Table 2 Index of decision-making

Percent distribution of currently married women by the
number of decisions in which the respondent
participates, alone or with her husband, Egypt 1995

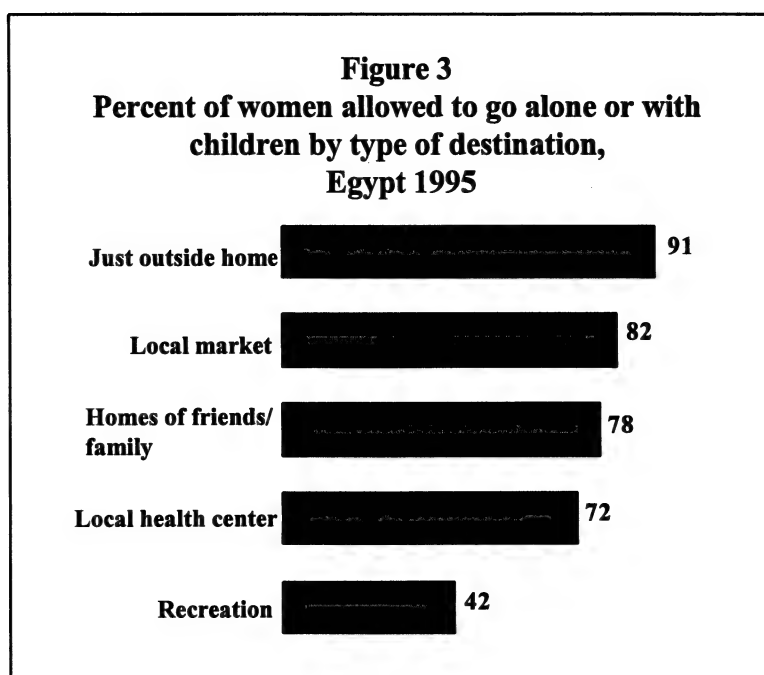| Number of decisions	Percent	Cumulative percent	Number of women
0	3.3	3.3	218
1	4.6	13.9	395
2	6.0	13.9	395
3	10.2	24.1	674
4	14.9	39.1	986
5	19.1	58.1	1,259
6	21.0	79.1	1,385
7	20.9	100.0	1,376
Total	100.0	-	6,599
Mean number	4.7		

Freedom of movement index

The 1995 Egypt DHS also obtained data that can be used to assess women's freedom of movement. For five separate locations, respondents were asked "Are you usually allowed to go to ... on your own, only with children, only with another adult, or not at all?" The places and women's responses are given in Table 3. Overall, the percentage allowed to go to different places alone or with children[2] ranged from over 90 percent 'just outside the house' to 42 percent for recreation (Figure 3). Of some note is the fact that around one-quarter of the women reported that they had to be accompanied by another adult when going to a health center.

Table 3 Freedom of movement

Percent distribution of currently married women by whether they are allowed to go alone, only with children, only with other adults or not at all to specified destinations, Egypt 1995

Destination	Go alone	Go only with children	Go only with another adult	Not go at all	Total
Just outside the house	88.3	2.9	5.2	3.6	100.0
Local market	80.6	1.6	3.3	14.5	100.0
Local health center	66.2	6.0	25.1	2.7	100.0
For recreation in the neighborhood	14.6	27.5	22.1	35.7	100.0
Homes of relatives and friends	58.1	19.7	8.2	4.0	100.0

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[2]   Note that the women who are allowed to go out only with children are included with the women allowed to go out alone. This is because, in some cases, women may have given the response 'only with children' not because they cannot really go out alone, but because they cannot leave the children alone and so must go only with the children.

Figure 3
Percent of women allowed to go alone or with children by type of destination,
Egypt 1995

Destination	Percent
Just outside home	91
Local market	82
Homes of friends/ family	78
Local health center	72
Recreation	42

An index of the degree of women's freedom of movement was created by adding up the number of places that women were allowed to go alone or with children. As Table 4 shows, women were allowed to go alone or with their children to an average of 3.6 places of the five considered. The cumulation of women's responses into an index measuring freedom of movement had a fairly robust Cronbach-α of 0.65.

Table 4 Freedom of movement index

Percent distribution of currently married women by the number of places they are allowed to go alone or with children, Egypt 1995

Number of places allowed to go alone or with children	Percent	Cumulative percent	Number of women
0	3.7	3.7	247
1	6.1	9.8	434
2	10.4	20.2	778
3	18.4	38.6	1,517
4	28.2	66.8	3,623
5	33.2	100.0	
Total	100.0		6,599
Mean number	3.6		

3   Correlates of Women's Empowerment: Bivariate Analysis

Since many factors contribute to a woman's level of empowerment, Egyptian women are likely to vary greatly in their overall level of decision-making and freedom of movement. In determining her level of empowerment, a woman's own attributes such as her age, education, and employment status are important as well as the characteristics of the environment she lives in currently and the environment in which she grew up. The discussion below looks at how women's level of empowerment as measured by the indices of decision-making and freedom of movement varies across variables that capture both the women's own characteristics and the characteristics of their environments. Mean values of the two empowerment indices are calculated separately for women with different individual and environmental characteristics. The variation in these mean values for the two empowerment indices is used to summarize the direction of association between the different individual and environmental characteristics and women's empowerment.

Women's own attributes and empowerment

A woman's level of education, her employment status, and media exposure are expected to be positively related to empowerment. Women who are educated, employed, and exposed to the media are likely to be better equipped with the information and the means needed to function effectively in the modern world. Together these factors are expected to influence both women's inherent abilities and their attitudes towards gender roles. In addition, employment helps to provide alternative sources of social identity, financial independence, and exposure to and integration into power structures independent of kin networks (Dixon-Mueller, 1993). Age and number of children capture women's stage of life. Empowerment of women can be expected to vary by the stage of life since the rights and responsibilities of women vary with age and presence of children (Rugh, 1984). All else being the same, older women and women with children are likely to have greater status, rights and responsibilities than younger women or women with no children.

The variation in the indices of decision-making and freedom of movement by the individual characteristics of the respondent is presented in Table 5. As expected, Table 5 shows that the mean level of both empowerment indices increases steadily and significantly with education. On average, women with no education have a mean of 4.3 for the index of decision-making compared with 5.7 for women with higher education. Similarly, empowerment varies significantly by whether women are employed for cash or not, and their level of media exposure.

The distribution of the mean values of the two empowerment indices by age and number of children suggests that women's empowerment does not increase linearly with age and with number of children; instead, it is women in the middle age groups (ages 30-44) that appear to have both the highest decision-making power and the maximum freedom of movement. Similarly, women with 3-4 children appear to have the maximum empowerment and women with no children or those with 5 or more have significantly lower levels of empowerment. Younger and older women have significantly lower mean values for both empowerment indices.

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Table 5 <u>Women's empowerment indicators by individual background characteristics</u>

Mean values of the indices of decision-making and freedom of movement among currently married women 15-49 by individual attributes of the women, Egypt 1995

Woman's own attributes	Decision-making index (range: 0-7)	Freedom of movement index (range: 0-5)	Number of women
Education			
No education	4.3[s]	3.4[s]	2,864
Some primary	4.6[s]	3.6[s]	1,278
Completed primary/some secondary	5.1[s]	3.7[s]	885
Completed secondary	5.3[s]	3.7[s]	1,101
Higher	5.7[rc]	4.3[rc]	471
Current employment status			
Working for cash	5.6[rc]	4.2[rc]	5,674
Not working for cash	4.6[s]	3.5[s]	925
Media exposure[1]			
Not exposed to all three	4.0[s]	3.2[s]	721
Exposed to any one	4.4[s]	3.4[s]	1,594
Exposed to any two	4.8[s]	3.6[s]	2,961
Exposed to all three	5.5[rc]	4.0[rc]	1,323
Current age			
15-19	3.4[s]	2.5[s]	320
20-24	4.1[s]	3.1[s]	1,003
25-29	4.6[s]	3.5[s]	1,276
30-34	5.1[s]	3.9	1,200
35-39	5.1[s]	3.9[s]	12,02
40-44	5.1[s]	4.0[s]	854
45-49	4.9[rc]	3.8[rc]	743
Number of living children			
0	3.2[s]	2.9[s]	631
1-2	4.9[s]	3.5[s]	1,878
3-4	5.1[s]	3.8[s]	1,997
5 or more	4.8[rc]	3.7[rc]	2,093
Total	4.7	3.6	6,599

rc = reference category against which the means of all other categories of the variable are compared to evaluate whether they are significantly different
s = significantly different from the mean of the reference category at a level of significance of at least 5%
[1] The three sources of media included are newspapers, radio and television.

Socioeconomic and cultural context and women's empowerment

Women's empowerment is seen to be as much an attribute of their environments as it is an attribute of women themselves (Mason, Smith, and Morgan, 1998 and Smith, 1989). This is because the cultural context in part defines what is acceptable for women to say or do and what is not. In addition, the characteristics of the place of residence well as the socioeconomic status of the household define the actual opportunities available to women.

Table 6 presents the variation in mean values of the women's empowerment indices by residence and the socioeconomic status of the households to which they belong. Both urban-rural

residence and administrative subdivisions are used in defining the residential variables in Table 6.[3] Two different indicators are used to measure the socioeconomic status of the respondent's household. The first is an assets index whose value indicates how many of 14 different durable assets the respondent's household owns.[4] The second indicator is the facilities index which measures the kind of water and toilet facilities in the respondent's household.[5]

Table 6 Women's empowerment by cultural and socioeconomic

Mean values of the indices of decision-making and freedom of movement among currently married women 15-49, by residence and household socioeconomic status indicators, Egypt 1995

Residence and socioeconomic status indicators	Decision-making index (range: 0-7)	Freedom of movement index (range: 0-5)	Number of women
Urban-rural residence			
Urban	5.2[rc]	3.9[rc]	3,088
Rural	4.3[s]	3.3[s]	3,511
Place of residence			
Urban Governorates	5.4[rc]	4.1[rc]	1,516
Lower Egypt urban	5.4	3.8[s]	852
Lower Egypt rural	4.7[s]	3.5[s]	1,963
Lower Egypt urban	4.7[s]	3.7[s]	680
Lower Egypt rural	3.9[s]	3.1[s]	1,525
Frontier Governorates	3.9[s]	2.6[s]	62
Index of assets			
0	4.0[s]	3.5[s]	322
1-3	4.2[s]	3.4[s]	1,640
4-8	4.9[s]	3.6[s]	3,954
9-14	5.6[rc]	4.2[rc]	6,84
Index of facilities			
Neither	4.3[s]	3.5[s]	1,327
Either water or toilet	4.5[s]	3.5[s]	3,561
Both water and toilet	5.5[rc]	4.0[rc]	1,711
Total	4.7	3.6	6,599

rc = reference category against which the means of all other categories of the variable are compared to evaluate whether they are significantly different
s = significantly different from the mean of the reference category at a level of significance of at least 5%

3   Administratively, Egypt is divided into 26 governorates grouped together as the Urban Governorates (Cairo, Alexandria, Port Said, Suez), Frontier Governorates and the governorates of Upper and Lower Egypt. Overall, the population is somewhat more rural than urban. In terms of most social and demographic indicators, the Upper Egypt governorates lag behind the other regions (El Zanaty et al., 1996).

4   The assets included in the index are: a radio with cassette recorder, a black and white television, a color television, a video recorder, a refrigerator, an electric fan, a gas/electric cooking stove, a water heater, a sewing machine, an automatic washing machine, any other washing machine, a bicycle, a private car/motorcycle, and farm or other land.

5   If the household had piped water or a well in the compound and had a flush toilet facility, the value of the facilities index is 2. The household scores 1 on the index if it had either tapped water/well in the compound or a flush toilet. If the household had neither piped water/well in the compound nor a flush toilet then the index value was 0.

As expected, the average values of the empowerment indices were higher among women living in urban areas than among rural women. Also as expected, women living in the Urban Governorates had the highest on both the index of decision-making and freedom of movement.

The mean values of the women's empowerment indices rose significantly with both indicators of socioeconomic status. The average value of decision-making index was 40 percent higher among women in the richest households (index of assets=9-14) compared to women in the poorest households (index of assets=0), and the value of the freedom of movement index was 20 percent higher. Similarly, women in households that had both piped water or a well in the compound and a flush toilet had a mean index of decision-making that was 28 percent higher and a mean freedom of movement index that was 14 percent higher than households which have neither (facilities index=0).

Premarital and marital influences and empowerment

Premarital influences on women for which information was obtained in the DHS include the educational status of the woman's parents, her work status before marriage, and her age at first marriage. Parental education is hypothesized to be positively associated with respondents' empowerment because educated parents are expected, in general, to break from traditional conceptions of strict gender roles and inculcate in both their sons and daughters a greater belief in self-reliance. Working for cash before marriage is assumed to be positively associated with early financial autonomy and greater exposure to non-traditional norms and self-reliance. A later age at first marriage is a commonly used indicator of a higher status for women. This is largely because a higher age at first marriage gives women time to mature, develop life skills and finish their education before taking on the responsibilities associated with marriage. In addition, it suggests that women are being valued for roles other than that of childbearer alone (Mason, 1986; Dixon-Mueller, 1993; and Dyson and Moore, 1983).

A woman's empowerment clearly depends on the characteristics of those who are in a position to enhance or curtail her empowerment. For a married woman, the person who is likely to have the greatest influence on her degree of empowerment is her spouse. It is expected that the more educated a woman's husband is the more likely he is to have egalitarian views that would help to promote his wife's participation in household decision-making and freedom of movement. Finally, co-residence with in-laws is assumed to have an important influence on women's ability to access resources directly, and to exercise autonomy and decision-making control (Dyson and Moore, 1983 and Dixon-Mueller, 1989).

Table 7 presents the variation in the empowerment indices with various premarital and marital influences. As Table 7 shows, parental literacy was positively associated with the scores of the DHS respondents on the empowerment indices. Moreover, increases in maternal literacy appeared to have a greater effect on the scores than increases in paternal literacy.

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Table 7 Women's empowerment indicators by premarital and marital influences

Mean values of the decision making and the freedom of movement indices among currently married women 15-49, by selected familial and marital characteristics, Egypt 1995

Familial and marital background characteristics	Decision-making index (range: 0-7)	Freedom of movement index (range: 0-5)	Number of women
Mother literate			
Yes	5.4[rc]	4.0[rc]	1,153
No	4.6[s]	3.5[s]	5,446
Father literate			
Yes	5.1[rc]	3.8[rc]	3,003
No	4.5[s]	3.5[s]	3,596
Age at first marriage			
<18	4.5[s]	3.4[s]	2,837
18-24	4.9[s]	3.7[s]	3,120
25+	5.2[rc]	3.9[rc]	642
Work for cash before marriage			
Yes	5.3[rc]	4.0[rc]	1,143
No	4.6[s]	3.5[s]	5,456
Husband's education[1]			
No education	4.4[s]	3.5[s]	1,951
Some primary	4.4[s]	3.5[s]	1,344
Completed primary/some secondary	4.9[s]	3.7[s]	1,154
Completed secondary	5.0[s]	3.6[s]	1,356
Higher	5.6[rc]	4.1[rc]	786
Living now with husband's family			
Yes	3.9[rc]	3.1[rc]	1,894
No	5.1[s]	3.8[s]	4,705
Total[1]	4.7	3.6	6,599*

rc = reference category against which the means of all other categories of the variable are compared to evaluate whether they are significantly different
s = significantly different from the mean of the reference category at a level of significance of at least 5%
[1] Due to missing information on husbands, the total number of women is 6,591 for husband's education.

The empowerment indices vary in the expected direction with both a woman's employment before marriage and her age at first marriage. On average, a woman who earned cash before marriage participated in a greater number of decisions and was able to go alone or with children to a greater number of places than women who had not worked in the modern cash economy prior to marriage. There was a significant positive association between the age at which women first married and their scores on both the indicators of empowerment.

Also as expected, the more educated the husband the higher were women's average scores on both the decision-making index and the freedom of movement indices. It is notable that, although the association of the woman's own education with her empowerment level is stronger than that of her husband's education, the difference is small. For example, the mean decision-making score varied from 4.4 for women if their husband had no education, to 5.6 if he had more than a secondary education; correspondingly the mean value of this index varied from 4.3 if the woman herself has no education to 5.7 if she had more than secondary education.

Finally, co-residence with in-laws is significantly associated with a curtailment of women's participation in decision-making and their freedom of movement. This is evident from the fact that women who were not residing with in-laws had an average score on the decision-making index which was about one-third higher than women who were co-resident with in-laws. Similarly, women not co-residing with in-laws had an average score on the freedom of movement index which was about one-fourth higher than for women who are co-residing.

Intra-spousal relations and empowerment

Information was obtained in the DHS on several variables that can be used to describe the nature of the relationship between spouses. It is hypothesized that husbands and wives who chose each other, who communicate freely with each other, and are similar in age and education, are more likely to have an egalitarian relationship than other couples. Indeed, a large age and/or educational difference between spouses in favor of the husband can put the wife at a relative disadvantage in her ability to exercise power within the marriage (Presser, 1975 and Sen, 1990).

Intra-spousal communication provides an indicator of women's levels of comfort in their relationship with their husbands. Marriages in which husbands communicate with their wives are likely to be more egalitarian and afford women greater opportunities to share and exercise control. The level of communication between DHS respondents and their husbands is measured by a spousal communication index which gives the number of topics from among five that the husband discussed regularly with the respondent.[6] About one-third of the women scored a 0 on this index because they said that their husband did not discuss any of the specified topics with them. At the other extreme, 5 percent of the women reported that their husbands discussed all of the topics with them regularly.

Consanguinity is another variable that is expected to be related to the empowerment indices. In Egypt, marriage to a blood relative, while affording women some protections, has, nonetheless, been found to be positively correlated with lower status for women (Nawar, Lloyd, and Ibrahim, 1994).

Finally, an environment in which women accept wife beating by husbands as 'justified', or environments in which women are actually beaten by their husbands, are unlikely to promote the empowerment of women. In the 1995 DHS, data were obtained on a woman's acceptance of the idea of a husband beating a wife in seven hypothetical situations. These data are used to construct an acceptance of beating index. This index measures the number of situation in which the respondent agreed that a husband would be justified in beating his wife.[7] In all, 13 percent of

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[6] The communication index is based on responses to the question " Does your husband discuss any of the following topics with you regularly, only sometimes, or never ?". The five topics women were asked about were: events at work, plans for the future, your children's activities, money or financial matters, and community news/gossip.

[7] The acceptance of beating index is based on the question "Sometimes a wife can do things which annoy or anger her husband. Please tell me if a husband is justified in beating his wife for each of the following situations:". The seven situations respondents were asked about are: when she burns the food, when she neglects the children, when she answers him back, when she talks to other men, when she wastes his money, when she refuses him sex, and any other situation specified by the respondent.

women said that there was no situation in which husbands were justified in beating their wives; also, very few women, about 2 percent, said that husbands were justified in beating their wives in all of the seven specified situations.

Table 8 presents the variation in the empowerment indices with measures of intraspousal relations. The results suggest that women who said that they chose their own husband were likely to participate in significantly more decisions than women who said they did not choose their husband; however, women's freedom of movement did not vary by whether they chose their husband or not (Table 8). Marriage to a relative was associated with significantly lower empowerment, both as measured by the index of decision-making and the freedom of movement index. Women's freedom of movement did not vary by spousal age difference, but the likelihood of a woman's involvement in decision-making varied significantly with this variable. The mean score on the decision-making index was 4.7 among women for the age difference was less than 15 years compared to 4.3 for women for whom the age difference was 15 years or more.

Women's empowerment levels varied with intra-spousal differences in education but not in a consistent manner. Educated women who had attained the same level of schooling as their spouse had the highest mean score on the index of decision-making followed by women who had more education than their husbands. However, women who had never attended school and whose husbands also had no education had the lowest mean score on the decision-making index. Thus, equality of education when both husband and wife have at least some education, is associated with the highest level of participation in decision-making by wives, while equality when both spouses have no education is associated with the lowest levels. The results are similar in the case of the freedom of movement index. Women with some education who had the same or more education than their husbands had higher mean scores on the latter index than women with no education whose spouses also have no education, or women who had less education than their husbands.

Intra-spousal communication appears to be a critical enabling circumstance for women's empowerment. Indeed, the mean score on the decision-making index ranged from 4.1 in the case where husbands and wives had not discussed any of the four topics to 5.5 for couples who had communicated regularly on all four topics. Similarly, the mean score on the freedom of movement index was lowest when the communication index was 0, the score rose to 3.7 where there was communication on one topic, and it reached 4.1 where there was communication on all topics.

Attitudes which denote acceptance of beating were strongly negatively associated with women's empowerment. As women's scores on the acceptance of beating index rose from 0 (husband not justified in beating wife for any reason) to 7 (husband justified in beating his wife for all reasons), the mean score on the decision-making index fell from a high of 5.4 to 4.1; the corresponding fall in the freedom of movement index was from a mean value of 4.0 to 3.5.

Table 8 Women's empowerment indicators by intra-spousal relations

Mean values of the indices of decision-making and freedom of movement index for currently married women 15-49, by various measures of intra-spousal relations, Egypt 1995

Intra-spousal relations indicators	Decision-making index (range: 0-7)	Freedom of movement index (range: 0-5)	Number of women
Chose own husband			
Yes	4.9rc	3.6rc	1,609
No	4.7s	3.6	4,990
Husband is blood relative			
Yes	4.5rc	3.5rc	2,804
No	4.9s	3.7s	3,795
Age difference between spouses (husband's age – wife's age)			
<2 years	4.8s	3.7s	782
2-4 years	4.7s	3.6	1,356
5-9 years	4.8s	3.6	2,561
10-14 years	4.8s	3.6	1,317
15 or more years	4.3rc	3.6rc	583
Education difference between spouses			
Husband less educated	4.9s	3.2	931
Equal: both have no education	4.3s	3.1s	1,449
Equal: both have education	5.2rc	3.2rc	1,649
Husband more educated	4.7s	3.0s	2,562
Index of intra-spousal communication			
0 No communication on any topic	4.1s	3.3s	2,292
1 Communicate on one topic	4.8s	3.7s	1,829
2 Communicate on two topics	5.2s	3.8s	1,174
3 Communicate on three topics	5.3s	3.8s	938
4 Communicate on all four topics	5.5rc	4.1rc	366
Acceptance of beating index			
Husband never justified	5.4s	4.0s	866
Husband justified for 1 reason	5.3s	3.9s	616
Husband justified for 2 reasons	5.0s	3.7	859
Husband justified for 3 reasons	4.8s	3.6	1,017
Husband justified for 4 reasons	4.6s	3.4	951
Husband justified for 5 reasons	4.5s	3.5	1,091
Husband justified for 6 reasons	4.0	3.3	1,094
Husband justified for 7 reasons	4.1rc	3.5rc	103
Respondent is beaten			
Yes	4.4rc	3.5rc	2,337
No	4.9s	3.7s	4,262
Total[1]	4.7	3.6	6,599

rc = reference category against which the means of all other categories of the variable are compared to evaluate whether they are significantly different
s = significantly different from the mean of the reference category at a level of significance of at least 5%
[1] Due to missing information on husbands, he total number of women is 6,591 for the variable education difference between spouses.

Finally, women who said that they had ever been beaten since they were first married, were significantly less likely than women who had never been beaten since marriage to participate in decision-making. They were also likely to have a significantly lower level of freedom of movement.

4   Correlates of Women's Empowerment: a Multivariate Analysis

The results of the bivariate analysis of the correlates of women's empowerment provided an initial evaluation of how women's empowerment is related in Egypt to a women's own attributes as well as to characteristics of their husbands and of their past and current environments. Clearly, a number of these individual and environmental characteristics are related to each other as well as to women's empowerment. Thus, it is difficult to conclude from the bivariate results alone which of the factors have a direct association with empowerment and which have a relationship only because of their association with the other factors. In order to identify the factors that have the most direct and strongest association with women's empowerment, it is necessary to examine the relationships within a multivariate framework.

The results from Ordinary Least Squares regression equations of the decision-making and the freedom of movement indices are presented in Table 9. Each empowerment indicator is regressed separately on women's individual characteristics (age, education, media exposure, number of children ever born, and current employment status), socioeconomic and cultural background characteristics (place of residence, area of residence, index of assets, and index of facilities), their familial and marital characteristics (mother's and father's literacy status, age at first marriage and husband's education), household structure (co-residence with in-laws) and intra-spousal resources and relations (intra-spousal age and education difference, spousal choice, work for cash before marriage, consanguinity, index of spousal communication, the acceptance of beating index, and exposure to violence).

The multivariate results shown in Table 9 confirm a large number of the bivariate results but also differ in a number of interesting ways. In keeping with the bivariate results, the multivariate analysis of the 1995 DHS data indicates that empowerment whether measured by a woman's participation in decision-making or her freedom of movement was higher the older she was, the greater her exposure to the media, the more children she had, and the greater her communication with her husband, as well as if she worked for cash and resided in an urban area. A woman's scores on both measures of empowerment were lower the higher her score on the acceptance of beating index, the larger the intra-spousal age difference, and if she lived with her in-laws. Women in the Urban Governorates had higher empowerment scores on both indices than women in Upper Egypt or in the Frontier Governorates. They also had greater freedom of movement than women in Lower Egypt but did not differ from them in terms of their scores on the decision-making index.

Table 9 Multivariate regression analysis: empowerment indices

Ordinary Least Square (OLS) regression coefficients for the index of decision-making and the index of freedom of movement for currently married women, Egypt 1995

	OLS Coefficients	
	DEPENDENT VARIABLES	
EXPLANATORY VARIABLES	Decision-making index (range: 0-7)	Freedom of movement index (range: 0-5)
Individual Characteristics		
Age	0.01***	0.02***
Education		
No education	Rc	Rc
Some primary	-0.01	0.07
Completed primary/some secondary	0.26**	0.10
Completed secondary	0.19	-0.00
Higher than secondary	0.13	0.30*
Index of media exposure	0.12***	0.11***
Number of children ever born	0.11***	0.04***
Current employment status		
Not working for cash	Rc	Rc
Working for cash	0.37***	0.37***
Socioeconomic and Cultural Background		
Place of residence		
Urban Governorates	Rc	Rc
Lower Egypt	-0.01	-0.31***
Upper Egypt	-0.50***	-0.44***
Frontier Governorates	-1.16***	-1.37***
Urban-rural residence		
Rural	Rc	Rc
Urban	0.21***	0.19***
Index of assets	0.00	-0.02*
Index of facilities	0.02	-0.07**
Familial and Marital Background		
Mother's literacy status		
Not literate	Rc	Rc
Literate	0.08	0.03
Father's literacy status		
Not literate	Rc	Rc
Literate	-0.00	0.07*
Age at first marriage	-0.01	-0.01
Husband's education		
No education	Rc	Rc
Some primary	0.01	0.09
Completed primary/some secondary	0.30**	0.09
Completed secondary	0.15	-0.07
Higher than secondary	0.24	-0.01
Household Structure		
Not living with husband's family now	Rc	Rc
Living with husband's family now	-0.60***	-0.23***
Intra-spousal Resources and Relations		
Spousal age difference (husband's age minus wife's age)	-.01***	-0.01**
Spousal educational difference		
Equal, both with education	Rc	Rc
Equal, neither has education	0.02	0.11
Husband less educated than wife	0.09	0.07
Husband more educated than wife	0.03	0.06

Table 9, continued		
Spousal choice		
Did not choose own husband	Rc	Rc
Chose own husband	0.05	-0.02
Work for cash before marriage		
Did not work for cash before marriage	Rc	Rc
Worked for cash before marriage	0.04	0.04
Husband is a blood relative		
No	Rc	Rc
Yes	-0.01	-0.06*
Index of spousal communication	0.22***	0.12***
Acceptance of beating index	-0.10***	-0.06***
Exposure to domestic violence		
Not beaten since marriage	Rc	Rc
Ever beaten since marriage	-0.18***	-0.03
Constant	4.04***	3.05***
Df	32	32
R²	0.221	0.157

Rc = reference category for the variable.
***p<0.01; **p<0.05; *p<0.10

There were a number of differences the multivariate and bivariate results with respect to the relationship between the empowerment indices and several key variables including: 1) **wealth**: women from wealthier households had significantly lower scores on the freedom of movement index than women from poorer households, and wealth appeared not to have affected a woman's score on the decision-making index; 2) **women's education**: a woman's education was not consistently related to her empowerment; a woman had either completed the primary level or had some secondary education had significantly higher scores on the decision-making index than women in any other educational category, whereas, women with higher than secondary education had the greatest freedom of movement; 3) **husband's education**: a woman's freedom of movement was unrelated to her husband's education, but her decision-making score was highest if her husband had completed primary school or had some secondary education; 4) **paternal literacy**: having a literate father significantly increased a woman's score on the freedom of movement index but was not associated with her score on the decision-making index; 5) **marriage to relative**: having a husband who was a blood relative was associated with a lower degree of freedom of movement but did not affect a woman's score on the decision-making index; and 6) **violence**: exposure to violence did not significantly affect woman's freedom of movement but did lower their participation in decision-making.

The effects of other factors including age at first marriage, maternal literacy, inter-spousal educational difference, spousal choice, and work before marriage were all either not significant or their effects were explained by other variables in the multivariate equation.

5   Women's Empowerment and Need for and Use of Contraception

A pioneering model of contraceptive use developed by Hermalin (1983) identifies the motivation to control childbearing and the costs of fertility regulation as the two main proximate

determinants of contraceptive use. In Hermalin's model, the motivation to control childbearing is seen as a function of the interaction between the supply of children for the individual woman (number of surviving children) and the demand for children (number of children desired). The costs of regulation are defined so as to include social and psychic as well as economic costs entailed in violating traditional norms and experimenting with something new.

In Hermalin's model, the characteristics of the women themselves, their empowerment and their ability to control their own lives, are either not discussed, or are perhaps treated as endogenous. However, several of the different elements of this model, especially the demand and supply of children, may themselves in part be a function of women's empowerment. According to this hypothesis, women who are in control of their lives and in a position to act on their desires would be more likely to demand fewer children and be in a better position to have only those that they demand. In addition, the ability to overcome social and psychic costs is also likely to be positively associated with women's empowerment almost by definition. In this context it is worth noting that a study of contraceptive trends and determinants in Egypt undertaken by El-Zanaty (1995), although not framed in terms of women's empowerment, supports the relevance of women's status variables for contraceptive use. Nonetheless, the study of the interlinkages between women's empowerment and demographic outcomes is in its initial stages, and these statements embody hypotheses that require testing.

Results of bivariate analysis

To begin to understand the association of women's empowerment with contraceptive use, Table 10 presents a bivariate look at women's empowerment as measured by the decision-making and freedom of movement indices and two variables that capture quite different aspects of Egyptian women's situation with regard to fertility regulation. The first variable is women's current contraceptive use status. The second variable, the contraceptive need status of women, is more refined than the current contraceptive use variable and categorizes women according to their exposure and need (Westoff and Ochoa, 1991). Women who have no need for contraception fall into two categories: those that are infecund or menopausal, and those that want another child within two years including women pregnant with or amenorrheic after a child that was wanted at conception. Women with a need for contraception are those who are currently pregnant with or amenorrheic after a mistimed or unwanted pregnancy, and fecund women who are neither pregnant nor postpartum amenorrheic and say that they do not want another child at all or at least not within two years, or are undecided. Women with a need for contraception are categorized according to whether they are currently using contraception (**met need**) or are not using contraception (**unmet need**).

From this table it is clear that whether it is women's current contraceptive use or their need status which is being examined, women who are regulating their fertility have a significantly higher mean score on both the empowerment indices than women who are not regulating their fertility. Further, it is also notable that women who are not currently in need for contraception because they desire a birth within two years or are pregnant with or amenorrheic after a desired birth, have the lowest empowerment scores of all women.

Table 10 <u>Women's empowerment indicators by contraceptive use and need</u>

Mean values of the decision-making and freedom of movement indices for currently married women 15-49, by contraceptive use and need, Egypt 1995

	Decision-making index (range: 0-7)	Freedom of movement index (range: 0-5)	Number of women
Currently using contraception			
Using	5.3[rc]	3.9[rc]	3,128
Not using	4.3[s]	3.4[s]	3,471
Contraceptive need status			
Desire birth <2 years	3.9[s]	3.1[s]	1,363
Infecund, menopausal, other	4.4[s]	3.6[s]	902
Unmet need: not using	4.7[s]	3.5[s]	1,206
Met need: using	5.3[rc]	3.9[rc]	3,128
Total number of women	4.7	3.6	6,599

rc = reference category against which the means of all other categories of the variable are compared to evaluate whether they are significantly different
s = significantly different from the mean of the reference category at a level of significance of at least 5%

Results of multivariate analysis

As discussed earlier, women's empowerment appears to be a function of a number of individual and contextual variables including women's age, employment, socioeconomic status, region, area, number of children, etc. Many of these variables have also been shown to affect women's use of contraception in Egypt (El Zanaty et al., 1996). Thus, although the results in Table 10 suggest that women's empowerment is likely to be an important determinant of women's need for and use of contraception, no definite conclusions can be drawn until the relationship is evaluated within a multivariate framework that controls for the variables that affect both empowerment and contraceptive use. The multivariate regression analysis of the 1995 DHS data for which the results are shown below was undertaken to address this question.

The results of the multivariate regression are presented for the effect of the two empowerment variables on three different contraception-related dependent variables. The three dependent variables are:

1) **Current use of contraception.** This variable takes the value 1 if a currently married woman was currently using contraception and 0 if she was not.

2) **Potential contraceptive need status.** This variable is defined for all currently married women who were not menopausal or infecund and were thus potentially in need of contraception. A woman who did not want a child within two years was potentially in need of contraception (whether she was currently using or not) and was coded 1 (categories 3 and 4 of the need status variable in Table 10). A woman who was pregnant with a wanted child, amenorrheic after a wanted child or wanted a child within two years was not currently in need of contraception and

was coded 0 (category 1 of the need status variable in Table 10).

3) **Use status for women who are in potential need for contraception.** The population for this variable was restricted to those women identified as being potentially in need (categories 3 and 4 of the need status variable in Table 10). From among these women, a woman who was using contraception was coded 1 and one who is not was coded 0.

For each dependent variable, four logistic regressions were run that controlled for women's age, education, index of media exposure, number of living children, women's current employment status, region and area of residence, husband's education, religion, and two socioeconomic variables, the indices of assets and facilities. In the first model, only the controls were entered. In the second and third models, each of the two empowerment indices was added. In the final model, the effect of both empowerment indicators entered simultaneously was evaluated.

The results in Table 11 suggest that, after taking into account all relevant controls, a higher score on both of the empowerment indices is associated with higher odds of using contraception. In Model 4, an increase of one point on the index of decision-making increased the odds of using contraception by 17 percent and a one point increase in the score on the freedom of movement index increased the odds of using contraception by 13 percent. Figure 4 plots the probability of contraceptive use at each score of the decision-making index holding all control variables constant at their mean values. The probability of contraceptive use more than doubled, from about 25 percent for women who scored 0 on the index of decision-making to over 50 percent for women who scored 7 on this index (Figure 4). Similar results were obtained for the freedom of movement index; the probability of contraceptive use ranged from about 34 percent for women who scored 0 on the freedom of movement index to 48 percent for women who scored 5 on the index.

The results in Table 11 also indicate that, irrespective of controls for empowerment, there are several variables that are consistently related to women's current use of contraception. For example, the odds of using contraception were greater among women with more children, with greater the exposure to the media, with an educated husband. The odds of using were also greater if the woman was from Lower Egypt or the Urban Governorates, lived in an urban area or resided in a higher socioeconomic status household. In addition, the older the woman was, the lower were the odds of a woman using contraception.

Table 11 <u>Multivariate regression analysis: Current use of contraception</u>

Odds ratios derived from logistic regressions for current use of contraception by currently married women on women's empowerment indicators controlling for individual characteristics and socioeconomic and cultural background, Egypt 1995

EXPLANATORY VARIABLES	DEPENDENT VARIABLE Current use of contraception (0: Not using ; 1: Using)			
	Model 1	Model 2	Model 3	Model 4
Women's Empowerment Indicators				
Index of decision-making		1.20***		1.17***
Index of freedom of movement			1.19***	1.13***
Individual Characteristics				
Age	0.97***	0.97***	0.97***	0.96***
Education				
No education	Rc	Rc	Rc	Rc
Some primary	1.07	1.07	1.06	1.07
Completed primary/some secondary	0.99	0.91	0.96	0.90
Completed secondary	1.16	1.06	1.14	1.06
Higher	0.82	0.74*	0.76*	0.71**
Index of media exposure	1.17***	1.13***	1.14***	1.12***
Number of living children	1.51***	1.47***	1.49***	1.47***
Current employment status				
Not working for cash	Rc	Rc	Rc	Rc
Working for cash	1.36***	1.25**	1.26***	1.20**
Socioeconomic and Cultural Context				
Place of residence				
Urban Governorates	Rc	Rc	Rc	Rc
Lower Egypt	1.28***	1.30***	1.36***	1.35***
Upper Egypt	0.40***	0.44***	0.43***	0.46***
Frontier Governorates	0.50**	0.61*	0.63	0.70
Urban-rural residence				
Rural	Rc	Rc	Rc	Rc
Urban	1.75***	1.65***	1.68***	1.61***
Husband's education				
No education	Rc	Rc	Rc	Rc
Some primary	1.16*	1.17*	1.16*	1.17*
Completed primary/some secondary	1.62***	1.55***	1.60***	1.54***
Completed secondary	1.40***	1.36***	1.42***	1.38***
Higher	1.50**	1.41**	1.48***	1.41**
Index of assets	1.05***	1.06***	1.06***	1.06***
Index of facilities	1.13**	1.12**	1.14**	1.13**
N[1]	6,593	6,593	6,593	6,593
Df	18	19	19	20
-2 Initial Log Likelihood	9130.07	9130.07	9130.07	9130.07
-2 Log Likelihood	7954.50	7825.14	7889.18	7796.39

[1] Some cases were omitted from the analysis due to missing values.
Rc = reference category for the variable.
***p<0.01; **p<0.05; *p<0.10

Figure 4
Probability of using contraception by score on the decision-making index, Egypt 1995

Note: The values of all control variables were held at their means.
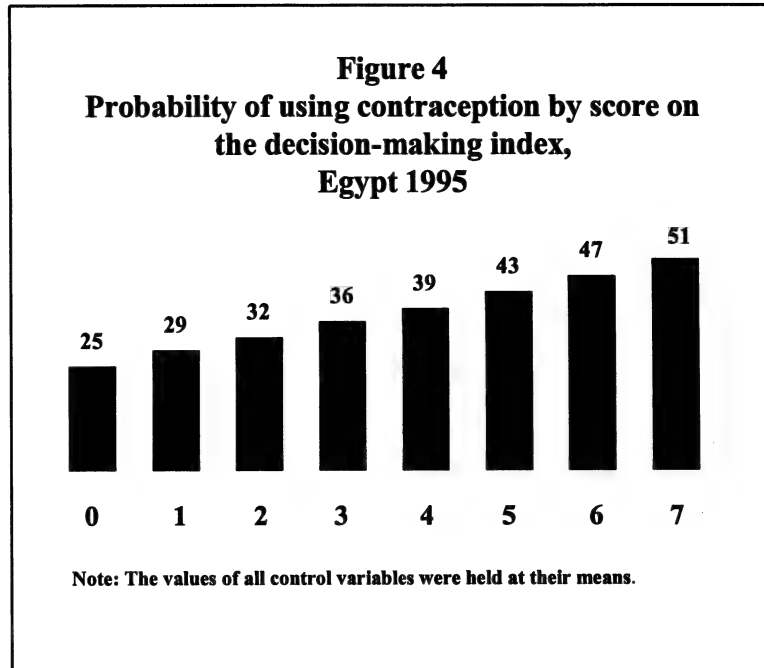
It is notable that contraceptive use appeared to be unaffected by women's education in Model 1. However, once empowerment was controlled for, higher education emerged as a significant influence on contraceptive use. This suggests that higher education affects contraceptive use in ways not captured by the two empowerment indices. Further, women's current employment for cash appeared to consistently increase their odds of using contraception, and this effect remained significant despite controls for empowerment.

As suggested earlier, the variable 'current use of contraception' is a gross measure which does not differentiate between women by their need for contraception. For a more refined analysis of contraceptive use, it is fruitful to ask what factors affect the probability of fecund and non-menopausal women being in need of contraception (that is, they either do not want a child within the next year, or not at all or are undecided, or if pregnant or amenorrheic, did not want the child at the time of conception) rather than not being in need (that is, wanting a child within the next two years or being pregnant with or amenorrheic after a child who was wanted at the time of conception).

Table 12 gives the results for the logistic regression of women's need for contraception. A higher empowerment level was clearly associated with increased odds of being in need. In Model 2, an increase of one point in a woman's score on the decision-making index increased the odds of being in need by 20 percent and in Model 3, an increase of one point in a woman's score on the freedom of movement index, increased the odds by 9 percent. However, when both the empowerment indicators were entered together in Model 4, the positive effect of the freedom of movement index was explained away although that of the decision-making index was almost unchanged. The probability of being in need of contraception (with all control variables held constant at their means) varied from 72 percent for women who score 0 on the index of decision-making to 90 percent for women who score 7 (Figure 5).

Table 12 Multivariate regression analysis: contraceptive need status

Odds ratios derived from logistic regressions for having a need at all for contraception for married women who are not infecund or menopausal on women's empowerment indicators controlling for individual characteristics and socioeconomic and cultural background, Egypt 1995

EXPLANATORY VARIABLES	DEPENDENT VARIABLE Contraceptive need status (0: Not in need; 1: In need)			
	Model 1	Model 2	Model 3	Model 4
Women's Empowerment Indicators				
Index of decision-making		1.20***		1.19***
Index of freedom of movement			1.09***	1.02
Individual Characteristics				
Age	1.04***	1.03***	1.03***	1.03***
Education				
No education	Rc	Rc	Rc	Rc
Some primary	0.99	0.96	0.98	0.96
Completed primary/some secondary	1.24	1.12	1.21	1.11
Completed secondary	1.09	0.96	1.07	0.96
Higher	0.85	0.74	0.79	0.73
Index of media exposure	1.09	1.05	1.08	1.05
Number of living children	2.15***	2.07***	2.12***	2.07***
Current employment status				
Not working for cash	Rc	Rc	Rc	Rc
Working for cash	1.20	1.10	1.16	1.09
Socioeconomic and Cultural Context				
Place of residence				
Urban Governorates	Rc	Rc	Rc	Rc
Lower Egypt	1.46***	1.47***	1.50***	1.48***
Upper Egypt	0.52***	0.56***	0.54***	0.56***
Frontier Governorates	0.35***	0.43**	0.39**	0.44**
Urban-rural residence				
Rural	Rc	Rc	Rc	Rc
Urban	1.68***	1.58***	1.64***	1.57***
Husband's education				
No education	Rc	Rc	Rc	Rc
Some primary	1.12	1.14	1.13	1.14
Completed primary/some secondary	1.75***	1.67***	1.74***	1.68***
Completed secondary	1.50***	1.48***	1.52***	1.48***
Higher	1.36*	1.27	1.36	1.27
Index of assets	1.03	1.03	1.03	1.03
Index of facilities	1.04	1.04	1.04	1.04
N[1]	5594	5594	5594	5594
Df	18	19	19	20
-2 Initial Log Likelihood	6269.03	6269.03	6269.03	6269.03
-2 Log Likelihood	4483.33	4407.45	4473.19	4406.79

[1] Some cases were omitted from the analysis due to missing values.
Rc = reference category for the variable.
***$p<0.01$; **$p<0.05$; *$p<0.10$

Figure 5
Probability of needing contraception by score
on the decision-making index,
Egypt 1995

Note: The values of all control variables were held at their means.
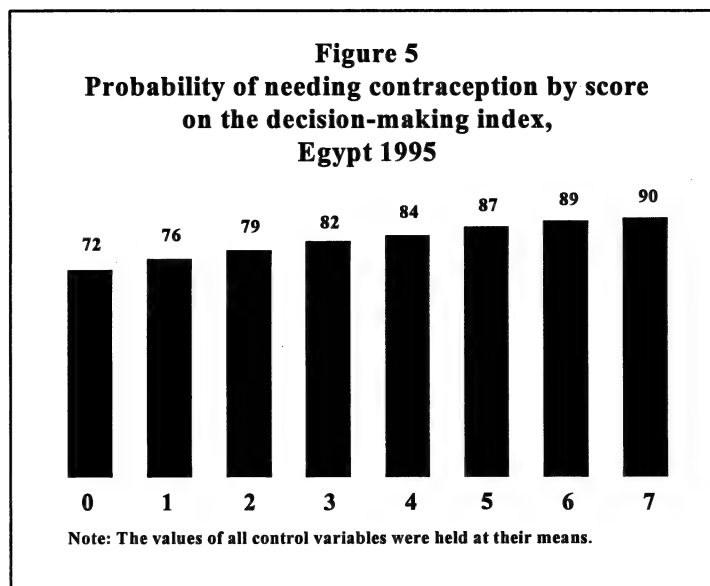
Notably, with the exclusion of menopausal and infecund women, the odds of being in need of contraception were found to increase with age. Also the odds of being in need more than doubled with each additional child. As compared to living in the Urban Governorates, living in Lower Egypt was associated with a significant increase in the odds of being in need, and living in Upper Egypt or the Frontier Governorates, was associated with a lowering of the odds. While women's own education had no effect on being in need of contraception, having a husband who was educated beyond the primary level greatly increased these odds. Neither the employment status of women nor their socioeconomic status appeared to significantly affect their need status.

Having determined the factors that distinguish between fecund and non-menopausal women who are in need for contraception and those who are not, a question remains as to what distinguishes the women in need of contraception between those who are using contraception (met need) and those who are not (unmet need). Table 13 shows that the higher the woman's score on either of the empowerment indices, the higher the odds of her using contraception. However, the relationship of use with freedom of movement appeared to be somewhat more robust than with decision-making participation (Model 4). Specifically, if all other variables were kept constant at their mean values in Model 4, the probability of using contraception among women potentially in need increased from 70 percent for women who scored 0 on the decision-making index to 76 for those who scored 7. Over the range of the freedom of movement index, it increased from 68 to 78 percent. While these probabilities verify the significant effect of women's empowerment on women's use of contraception, they also suggest that the probability of contraceptive use for the average woman with a need for contraception is already very high even when empowerment is low.

Interestingly, the probability of using contraception among women who were identified as having a need was unaffected by the number of children. Comparing with the results of Table

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<u>Table 13 Multivariate regression analysis: contraceptive use status among those with need</u>

Odds ratios derived from logistic regressions of having met need among married women with need on women's empowerment indicators controlling for individual characteristics and socioeconomic and cultural background, Egypt 1995

EXPLANATORY VARIABLES	DEPENDENT VARIABLE Contraceptive use status among those with need for contraception (0: Unmet need; 1: Met need)			
	Model 1	Model 2	Model 3	Model 4
Women's Empowerment Indicators				
Index of decision-making		1.06***		1.04*
Index of freedom of movement			1.08***	1.11***
Individual Characteristics				
Age	1.05***	1.05***	1.05***	1.05***
Education				
No education	Rc	Rc	Rc	Rc
Some primary	0.96	0.96	0.96	0.96
Completed primary/some secondary	0.82	0.79*	0.81	0.78*
Completed secondary	1.04	1.01	1.04	1.02
Higher	0.45***	0.43***	0.43***	0.42***
Index of media exposure	1.17***	1.16***	1.17***	1.15***
Number of living children	0.99	0.99	0.99	0.98
Current employment status				
Not working for cash	Rc	Rc	Rc	Rc
Working for cash	0.95	0.92	0.92	0.88
Socioeconomic and Cultural Context				
Place of residence				
Urban Governorates	Rc	Rc	Rc	Rc
Lower Egypt	1.31**	1.32**	1.33**	1.35**
Upper Egypt	0.47***	0.49***	0.47***	0.50***
Frontier Governorates	0.73	0.77	0.79	0.87
Urban-rural residence				
Rural	Rc	Rc	Rc	Rc
Urban	1.69***	1.66***	1.66***	1.61***
Husband's education				
No education	Rc	Rc	Rc	Rc
Some primary	0.95	0.95	0.96	0.95
Completed primary/some secondary	1.12	1.10	1.12	1.11
Completed secondary	1.00	1.00	1.02	1.01
Higher	1.36	1.33	1.35	1.31
Index of assets	1.07***	1.07***	1.08***	1.08***
Index of facilities	1.15*	1.14*	1.15*	1.15*
N[1]	3844	3844	3844	3844
Df	18	19	19	20
-2 Initial Log Likelihood	5125.36	5125.36	5125.36	5125.36
-2 Log Likelihood	4573.81	4565.57	4566.94	4553.72

[1] Some cases were omitted from the analysis due to missing values.
Rc = reference category for the variable.
***$p<0.01$; **$p<0.05$; *$p<0.10$

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12, this allows us to conclude that the number of children distinguished between those women who wanted another child within the next two years and those who did not want another child at all, were undecided or wanted another child after two years. However, it did not have an effect on women's current use of contraception. Husband's education beyond primary also did not affect women's use of contraception but did affect their being in need.

By contrast, the socioeconomic status of the household to which women belonged and their level of media exposure did not affect women's being in need of contraception, but positively influenced their odds of using contraception if they were in need. Having higher education also significantly differentiated between women who were users and those who were not, even though it did not affect women's being in need. However, the relationship was the inverse of what might be expected: among women who were in need for contraception, the odds of using contraception were lower among women who had higher education than women who had none. This may be due to the fact that higher education is associated with increased odds of contraceptive discontinuation (El-Tawila, 1995). Woman's age and region and area of residence affected women's odds of using contraception if they were need in the same way as they affected women's odds of being in need at all.

6   Summary and Conclusions

This study had two main objectives—to identify the correlates of women's empowerment and to examine the relationship of women's empowerment and contraceptive need and use. Specifically, two different aspects of women's empowerment were examined: women's participation in household decision-making and their level of freedom of movement. Indices that summed over the total number of decisions in which women participated alone or jointly, and the number of places they were allowed to go to alone or with children were defined. A typical woman was found to participate in 4.7 decisions of the 7 considered, and was allowed to go out to 3.6 places of the 5 considered.

Women's decision-making roles and freedom of movement both were greater the older the woman was, the more children she had, the higher her media exposure, if she was currently employed for cash, if she lived in an urban area, and if she did not live with her husband's family. In addition, the study results suggest a strong association between higher empowerment and an egalitarian marriage (one in which the interspousal age difference was small, interspousal communication was high, and wives were less likely to feel that husbands were justified in beating their wives). Somewhat surprisingly, the multivariate analysis did not show a consistent positive relationship of women's empowerment and education. The relationship of wealth and empowerment also was not consistent; while wealth did not appear to affect women's decision-making roles, women from wealthier households were found to have lower scores on the freedom of movement index.

With regard to the second objective of the study—the examination of the relationship between women's empowerment and contraceptive need and use—women's empowerment was found to be an important determinant of contraceptive use in Egypt. The higher was the level of

empowerment as measured by the two indices, the higher the level of contraceptive use. Restricting the analysis to women who were non-menopausal and fecund and examining the probability of being in need of contraception separately from the probability of using contraception, offered some refinements to these conclusions. First, the probability of being in need at all for contraception was affected more by women's participation in decision-making than by their freedom of movement. In this regard, it is especially notable that the more commonly used proxies of empowerment, women's education and employment, were not significantly related to the probability of women being in need for contraception. Secondly, given that a woman was in need for contraception, the more empowered she was in terms of participation in decision-making and even more so in terms of freedom of movement, the more likely she was to be using contraception. Women's employment did not affect contraceptive use among women in need but women who had attended school beyond the secondary level were found to be less likely to be using contraception than women with no education. The latter effect requires further investigation but is in keeping with research that finds more educated women to have higher odds of discontinuation of contraceptive use (El-Tawila, 1995). Higher discontinuation rates imply that at any given moment these women may be less likely to be using a method.

These findings suggest very strongly that empowerment of women in Egypt is important for fertility desire formation and for using contraception if women are in need. In this context, education and especially employment are also important, not for their direct effects on contraceptive use, but for their effects on women's empowerment. As expected, women's empowerment was found to increase with age and number of children and was higher in some regions of the country than in others. However, it is the finding of the importance of the intra-spousal communication variables and of attitudes that reject the right of husbands to physically abuse their wives that strongly suggest that women's empowerment is grounded within the family in Egypt. These results further endorse the critical contribution of gender egalitarian relationships to the promotion of women's empowerment.

The study also offers several other important insights unrelated to women's empowerment. First, contraceptive use among women who were identified as having a need was unrelated to the number of children, although the odds of having a need at all almost doubled with each child that a woman had. This finding suggests that as the number of children a woman has increases and she expresses a desire to end or postpone childbearing, the use of contraception does not automatically follow. Even though having another child may put women into the category of wanting no more children, it does not necessarily lead to their use of contraception.

In addition, factors which put a woman into the category of women who had a need for contraception were not all the same as those which were strongly associated with a woman's use of contraception once she was in need. In particular, media exposure was found to affect the use of contraception without affecting the need for contraception. The greater a woman's exposure to media was, the more likely she was to be using contraception. This suggests that manipulating media messages not only about family planning, but also about gender equity may be an effective means of reaching women.

The fact that socioeconomic status affected contraceptive use but not women's being in need of contraception also has some policy implications. From a policy perspective, the fact that wanting to postpone or not have any more children was unrelated to the socioeconomic status of the household suggests that poor women are as likely to be in need of contraception as rich ones, all else being the same. However, the fact that the probability of using contraception if women were in need, was higher among the rich than the poor implies that it is imperative that policies be devised that reach the poor directly with services for contraception.

In conclusion, it can be said that women's empowerment affects both the probability of needing contraception and of using it. Some of the factors that enhance women's empowerment can be directly affected by enhancing women's opportunities for education and employment as well as by increasing their media exposure. Other variables which enhance women's empowerment such as non-abusive spousal relationships, attitudes that do not condone domestic violence, and spousal communication have to be manipulated through programs which promote gender equity and gender egalitarian ideals among both men and women.

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Profile of Women with an Unmet Need for Family Planning from a Child Survival Perspective

by

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The family planning program in Egypt has been successful in providing many couples with contraceptive services. As a result, Egypt has experienced a period of major demographic change. Despite the program's success, however, Egypt continues to face a number of important challenges, especially the need to serve women that are most in need of contraceptive services. Efforts to identify the group of women in need of family planning services have usually taken into account women's fertility preferences and contraceptive use status. From this traditional perspective, women are defined as having an unmet need for family planning if they want no more children or want to delay the next birth for at least 2 years and they are not using family planning, or they are pregnant or amenorrheic and their last birth was unwanted or mistimed (Westoff, 1995). According to the results of the 1995 Egypt Demographic and Health Survey (DHS), one in six currently married Egyptian women has an "unmet need" for family planning from this perspective (El-Zanaty et al., 1996).

The objective of this paper is to consider the potential need for family planning from a somewhat different perspective, that of avoiding births for which there is an increased risk of mortality for the child. In this regard, women who are exposed to having a birth at too short an interval or too high parity are defined as in need for family planning in order to reduce the level of risk of mortality among their children. This paper estimates the overall level of the need for family planning in Egypt from this child survival perspective and considers the extent to which this need is being met.

1   Background

The strong relationship between maternal fertility patterns and child survival risks has been documented in various studies. Typically children are more likely to die in early childhood if they are born to mothers who are too young or too old, if they are born after too short birth interval or if they are of high order birth.

Both short birth intervals and high birth order have been shown to be particularly associated with elevated mortality risks among young children. For example, Palloni and Millman (1986) used multivariate techniques to test the relationship between the pace of childbearing and infant mortality. They found that mortality risks during infancy and early childhood almost doubled when births occurred at intervals shorter than 18 months. A study by Tam (1991) showed that, in Peru, both high order birth (order four or higher) and short birth intervals (less than 18 months) were associated with increased mortality risk, especially during the neonatal period. Similarly, Mturi and Curtis (1995) found that, among Tanzanian children,

the mortality risks during the first five years of life were significantly associated with a child's birth order and the length of the preceding birth interval. Other studies for Bangladesh (Muhuri and Menken, 1993), Sweden and Hungary (Miller, 1989) and Indonesia and Mexico (McNamara, 1983) also document an inverse association between birth intervals and children's mortality risks.

Both short birth intervals and high order birth have also been shown to be associated with elevated mortality risks among Egyptian children. Results from the 1995 Egypt DHS showing the relationship between child mortality levels and the mother's parity and the length of the previous birth interval are presented in Table 1. These data indicate that a child born within 24 months of the previous birth was, on average, nearly three times more likely to die during early childhood than a child for whom the interval following the preceding birth is longer than 2 years (El-Zanaty et al., 1996). With regard to birth order, sixth order and higher births had the highest mortality rates at all ages.

Table 1   Infant and child mortality by demographic characteristics

Infant and child mortality for the ten-year period preceding the survey, by selected demographic characteristics, 1995 Egypt Demographic and Health Survey

Demographic characteristics	Neonatal mortality	Postneonatal mortality	Infant mortality	Child mortality	Under-five Mortality
Previous birth interval					
<24 months	65.6	63.1	128.7	43.8	166.9
24-47 months	23.0	24.3	47.4	21.2	67.6
48 months or more	19.7	23.1	42.8	15.3	57.5
Birth order					
1	40.0	31.4	71.4	14.9	85.3
2-3	31.5	31.2	62.7	22.9	84.2
4-5	34.0	34.0	68.0	27.7	93.8
6+	48.9	50.4	99.3	36.4	132.1
Total	37.4	35.7	73.1	24.9	96.2

Note: Rates are for the calendar period 1986-1995.
Source: El-Zanaty et al., 1996, Table 9.4

Other studies of the patterns of child mortality in Egypt have also found a strong association between mortality risk and both parity and the length of the birth interval (Nawar et al., 1986).

2   Data and Definitions

This study uses data from the 1995 Egypt DHS to describe the profile of women with an unmet need for family planning from a child survival perspective. From this perspective, a woman is considered as potentially in need of contraceptive services if a child that she might conceive at the time of the survey would be born less than 24 months after a preceding birth or would be of birth order six or higher. For purposes of the study, a respondent in the 1995 Egypt

DHS was defined as potentially in need of family planning from a child survival perspective if she was currently married, and her last birth occurred less than 15 months before the survey or if she had five or more children.

Table 2 shows the distribution of 1995 DHS respondents in these categories. Two in 5 women were in one of the risk categories. Women were more likely to be at risk of having a high order birth than of having a short interval birth. Around 1 in 20 women fell into both risk categories.

Table 2   Elevated child survival risk by background characteristics

Percent distribution of currently married women 15-49 at risk of conceiving a child at an elevated risk of dying according to selected background characteristics, Egypt 1995

Background characteristics	Child survival risk category				Not in any risk category	Meno-pausal[1]/ infecund[2]	Total percent	Number of women
	Short interval birth	High order birth	Short interval and high order birth	Total				
Age								
15-19	35.9	0.0	0.0	35.9	63.9	0.3	4.8	658
20-24	37.5	0.6	0.9	39.0	59.0	2.1	15.2	2,065
25-29	24.7	5.6	5.4	35.7	60.4	3.8	19.5	2,650
30-34	12.3	21.6	8.8	42.7	50.6	6.8	18.0	2,442
35-39	4.3	37.3	8.0	49.6	36.7	13.7	17.4	2,367
40-44	0.7	42.4	4.0	47.1	28.4	24.5	13.3	1,801
45-49	0.1	30.0	0.8	31.0	11.6	57.4	11.8	1,601
Urban-rural residence								
Urban	14.9	16.2	2.8	33.9	51.2	15.0	46.3	6,291
Rural	15.7	24.6	6.5	46.8	38.7	14.5	53.7	7,292
Place of residence								
Urban Governorates	14.3	14.9	2.2	31.5	53.0	15.5	23.0	3,122
Lower Egypt	14.7	22.0	3.4	40.1	46.3	13.6	42.2	5,736
Urban	14.8	17.0	2.0	33.8	51.4	14.8	12.4	1,686
Rural	14.6	24.1	4.0	42.7	44.1	13.2	29.8	4,050
Upper Egypt	16.7	23.1	8.2	47.9	36.6	15.4	34.8	4,725
Urban	16.2	18.1	4.8	39.1	47.0	14.0	10.9	1,483
Rural	17.0	25.3	9.7	52.0	31.9	16.1	23.9	3,241
Education								
No education	12.8	29.0	7.4	49.2	31.9	18.9	42.6	5,788
Some primary	11.7	28.8	5.5	46.0	38.8	15.1	19.6	2,666
Completed primary/ some secondary	17.6	15.5	2.8	35.9	51.3	12.8	13.2	1,787
Completed secondary/ higher	21.2	2.8	0.7	24.8	67.2	8.1	24.6	3,341
Total	15.3	20.7	4.8	40.8	44.5	14.7	100.0	13,583

[1] Women were defined as menopausal if they were not pregnant, amenorrheic or using a contraceptive method and they had not had a period in six months, or they reported that they were menopausal.

[2] Women were defined as infecund if they were not menopausal, postpartum amenorrheic or pregnant and had not had a birth, had been continuously married, and had not used contraception during the five-year period before the survey.

Older women (age 30 and above) were more likely to be at risk of a high order birth, while women under age 30 were more likely to be at risk of a short birth interval. There was no difference between urban and rural women in the percentage at risk of a short interval birth. However, the percentage at risk of a high order birth varied markedly between urban and rural areas; 25 percent women in rural areas were in the high order birth risk group compared to 16 percent of women in urban areas.

Half of women from rural Upper Egypt were in one or both of the risk categories. In contrast, only around 1 in 3 women from the Urban Governorates and urban areas in Lower Egypt were in any risk category.

The proportion of women who were in any risk category decreased directly with a woman's educational level. The greatest contrast by education was in the proportion of women in the high order birth risk category; women with no education were more 10 times as likely women who had completed secondary school or higher to fall into this risk group.

3   Level of Unmet Need from a Child Survival Perspective

For the purposes of this analysis, a woman was considered to be in need of family planning if she fell into one of the above child survival risk categories (i.e., she was at risk of having a birth within 24 months of a prior birth and/or she had previously had 5 or more births) and she was defined as potentially at risk of another pregnancy (i.e., she was not menopausal or infecund). Table 3 shows the distribution of currently married women 15-49 interviewed in the 1995 DHS who were in need of family planning from this child survival perspective. The group with an **unmet** need for family planning included fecund women in the child survival risk categories who were not currently using contraception (shown in columns 1–3 of Table 3). From the child survival perspective, the total unmet need in Egypt is 18 percent. The group with a **met** need for family planning includes fecund women in the child survival risk categories who were currently using contraception (shown in columns 5–7 of Table 3). Overall, 23 percent of married women fell into one of the risk categories and was using family planning.

Table 3 also provides an overview of the variation in the level of unmet need from the child survival perspective by key background characteristics. By age, the level of unmet need is greatest among women under age 25. The level of unmet need in rural areas was more than double the level in urban areas (24 percent and 11 percent, respectively). Women in rural Upper Egypt were more likely to have unmet need from a child survival perspective than women in rural Lower Egypt (35 percent and 15 percent, respectively). The high level of unmet need in rural Upper Egypt is particularly notable. At the time of the survey, it exceeded the level of total using family planning (23 percent) in the region.

The likelihood that a woman has unmet need also varied with a woman's level of education. Overall, 1 in 10 women who had completed secondary or higher had an unmet need compared to 24 percent among women with no education.

Table 3 <u>Unmet need for family planning from a child survival perspective</u>

Percent distribution of currently married women 15-49 by child survival risk category and use of family planning, according to selected background characteristics, Egypt 1995

Background characteristics	Not using family planning				Using family planning				Meno-pausal/in-fecund	Total percent	Number of women
	Short interval birth	High order birth	Short interval and high order birth	Not in any risk category	Short interval birth	High order birth	Short interval and high order birth	Not in any risk category			
Age											
15-19	24.0	0.0	0.0	59.5	11.8	0.0	0.0	4.3	0.3	100.0	658
20-24	21.4	0.3	0.6	42.8	16.1	0.2	0.3	16.2	2.1	100.0	2,065
25-29	13.0	2.7	3.7	29.6	11.6	3.0	1.7	30.9	3.8	100.0	2,650
30-34	5.8	8.1	5.9	15.7	6.4	13.5	2.9	34.9	6.8	100.0	2,442
35-39	1.9	10.0	6.0	8.4	2.4	27.3	2.0	28.3	13.7	100.0	2,367
40-44	0.4	10.8	2.7	4.4	0.4	31.6	1.3	24.0	24.5	100.0	1,801
45-49	0.0	9.1	0.6	1.8	0.1	20.9	0.3	9.8	57.4	100.0	1,601
Urban-rural residence											
Urban	6.1	3.3	1.5	18.6	8.8	12.9	1.3	32.5	15.0	100.0	6,291
Rural	10.4	8.8	5.0	21.6	5.3	15.8	1.6	17.1	14.5	100.0	7,292
Place of residence											
Urban Gov.	5.4	2.8	1.0	18.1	8.9	12.1	1.2	35.0	15.5	100.0	3,122
Lower Egypt	7.2	4.3	2.0	18.5	7.5	17.7	1.4	27.8	13.6	100.0	5,736
Urban	5.7	3.0	0.9	17.5	9.1	13.9	1.2	33.9	14.8	100.0	1,686
Rural	7.8	4.8	2.5	18.9	6.8	19.2	1.6	25.2	13.2	100.0	4,050
Upper Egypt	11.8	10.9	6.5	23.8	4.9	12.1	1.7	12.9	15.4	100.0	4,725
Urban	8.1	4.8	3.1	21.2	8.2	13.4	1.7	25.8	14.0	100.0	1,483
Rural	13.5	13.8	8.1	25.0	3.4	11.5	1.6	6.9	16.1	100.0	3,241
Education											
No education	9.0	9.7	5.5	17.1	3.8	19.3	1.9	14.8	18.9	100.0	5,788
Some primary	6.8	8.1	3.6	16.6	4.9	20.7	1.9	22.2	15.1	100.0	2,666
Comp. prim./ some sec.	8.9	3.4	1.6	23.3	8.7	12.1	1.2	28.1	12.8	100.0	1,787
Comp. sec./ higher	8.3	0.5	0.3	26.9	12.9	2.3	0.4	40.2	8.1	100.0	3,341
Total	8.4	6.3	3.3	20.2	6.9	14.5	1.5	24.2	14.7	100.0	13,583

4 Profile of Women in Need of Family Planning from a Child Survival Perspective

Table 4 shows the percent distribution of currently married women with an unmet need for family planning from the child survival perspective by selected background characteristics. This profile of women takes into account not only the prevalence of unmet need in a particular population subgroup (as shown in Table 3) but also the size of the population in each of the subgroups.

Table 4   Profile of women with an unmet need for family planning from a child
survival perspectives

Percent distribution of currently married women 15-49 with an unmet need for
family planning from a child survival perspective by selected characteristics,
according to child survival risk category, Egypt 1995

Background characteristics	Short interval birth	High order birth	Short interval and high order birth	In any risk category
Age				
15-19	13.9	0.0	0.0	6.5
20-24	38.8	0.8	2.7	18.9
25-29	30.3	8.3	21.5	21.0
30-34	12.5	23.1	31.8	19.8
35-39	3.9	27.9	31.3	17.3
40-44	0.6	22.9	10.7	10.2
45-49	0.1	17.1	2.0	6.4
Interval since last birth				
0-11 months	86.2	0.0	87.9	56.5
12-23 months	13.8	25.7	12.1	17.6
24-47 months	0.0	33.6	0.0	11.7
48 or months	0.0	40.7	0.0	14.2
Urban-rural residence				
Urban	33.7	24.7	20.2	28.1
Rural	66.3	75.3	79.8	71.9
Place of residence				
Urban Governorates	14.9	10.4	7.0	11.9
Lower Egypt	36.2	28.9	25.3	31.6
Urban	8.4	6.0	3.2	6.6
Rural	27.8	22.9	22.1	25.0
Upper Egypt	48.9	60.7	67.7	56.5
Urban	10.5	8.3	10.0	9.6
Rural	38.4	52.4	57.7	46.9
Education				
No education	45.7	65.7	70.1	57.2
Some primary	15.9	25.3	21.3	20.2
Completed primary/some secondary	14.0	7.1	6.2	10.2
Completed secondary/higher	24.4	1.9	2.3	12.5
Total	100.0	100.0	100.0	100.0
Number of women	1,140	852	453	2,446

Table 4 shows that 2 in 3 women with unmet need for family planning were under age
35. Women at risk of a short birth interval were mainly under age 30, while two-thirds of those at
risk of a high order birth were in the 35-49 age group. Women at risk of both a short interval and
a high order birth were concentrated in the 25-39 age group.

As expected since a short birth interval was one of the criteria in defining need, 5 in 10 of
the women with unmet need had given birth in the one-year period preceding the survey.

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Table 4 also shows that women with an unmet need for family planning from a child survival perspective were heavily concentrated in the rural areas. Overall, 72 percent of the women in need were rural residents. Nearly half (47 percent) lived in rural Upper Egypt, and slightly more than one-quarter lived in rural Lower Egypt. Urban women who were in need of family planning were somewhat more likely to live in the Urban Governorates than in urban areas in Lower Egypt and Upper Egypt.

With respect to educational level, around 6 in 10 of the women with an unmet need for family planning had never attended school. Nearly 80 percent of women with an unmet need for family planning had less than a primary education. Among the more highly educated women who were in need, the majority was at risk of a short birth interval.

5   Experience with Family Planning

Women's attitudes about family planning use are shaped in part by their past experience in using family planning. This section of the paper first considers the level of experience with the use among women who are considered to have an unmet need for family planning from a child survival perspective. The reasons that these women had for discontinuing use of contraceptive methods in the past are then examined. Finally, the reasons that the women had for not using contraception at the time of the survey are described.

Ever use of family planning

Table 5 shows that the percent distribution of the currently married women aged 15-49 with an unmet need for family planning by the method ever used. Overall, 46 percent of the women defined as in need from a child survival perspective had used a family planning method at some time. Forty-four percent had used a modern contraceptive method. The most commonly used modern method was the pill (33 percent), followed by the IUD (22 percent).

Table 5   Family planning experience

Percentage of currently married women 15-49 with an unmet need for family planning from a child survival perspective who had used family planning by the method ever used, according to child survival risk category, Egypt 1995

Ever use of family planning	Short interval birth	High order birth	Short interval and high order birth	In any risk category
Any method	31.5	62.5	51.6	46.0
Any modern method	29.7	60.1	49.6	44.0
Pill	18.3	49.8	39.7	33.2
IUD	17.5	29.0	22.4	22.4
Injectable	1.5	8.6	4.3	4.5
Condom	2.9	5.6	2.7	3.8
Other modern	0.3	3.2	2.1	1.6
Any traditional method	4.2	11.2	6.9	7.1
Number of women	1,140	852	453	2,446

Women at risk of a short interval birth were less likely to have ever used a method than women in the other risk categories. With regard to method choice, women at risk of a short interval birth were more likely to have used the pill or the IUD than other methods. In contrast, women in the other risk categories were more than twice as likely to have ever used the pill than the IUD.

Reasons for discontinuation use of family planning

Further insight into the experience that women have had in using family planning can be obtained by examining the reasons that women with an unmet need who had ever discontinued contraception had for stopping use. In the 1995 DHS, information on the reason for termination of use was obtained for all segments of use reported by respondents during the five-year period before the survey. Table 6 presents this information for the method women with an unmet need had used most recently. The distribution refers to the reason the woman discontinued the method she had used most recently in the five-year period. Many of the women in need had terminated using because of side effects. One-third of the most recent segments of use reported by women in need were terminated because the woman had experienced side effects. An additional 10 percent ended because of the health concerns the women had. Former users of the IUD and injectables were more likely to cite side effects as a reason for stopping than former users of pill. In general, other method-related reasons were cited much less frequently than side effects or health concerns.

Women often reported that they had stopped using because they wanted to become pregnant; 19 percent of all prior segments of use among women in need ended for this reason. On the other hand, many of the women became pregnant while using a method. Method failure was reported in the case of 15 percent of the recent segments of use.

The percentage of recent segments ending in accidental pregnancy varied by method. The rate of accidental pregnancy was lowest among those using the IUD and injectables. Only 4 percent of IUD terminations among women in need were due to the failure of method. In contrast, one-fifth of the most recent segments of pill use among women in need ended in an accidental pregnancy. Method failure also was a major factor in terminations of the condom and traditional methods.

There is little evidence that disapproval of the husband was an important factor in the decisions to terminate use for most methods. However, as might be expected, women in need who had used the condom were more likely to give this reason than were ever users of other methods. Finally, infrequent sex was the reason of discontinuation for 1 in 10 recent segments of use among women in need.

Table 6 <u>Reasons for discontinuation of use of family planning</u>

Percent distribution of women with unmet need for family planning who had ever discontinued use of family planning in the five-year period before the survey to the main reason for discontinuation of the last method used, according to method, Egypt 1995

Main reason for discontinuation	Pill	IUD	Injec-tables	Condom	Prolonged breast-feeding	All segments
Fertility-related reasons						
Become pregnant	21.7	4.1	3.9	20.6	24.3	14.8
To become pregnant	12.3	33.1	3.3	8.3	9.9	18.9
Infecund/menopausal	2.4	1.4	2.8	6.1	0.0	2.2
Infrequent sex/husband away	12.8	4.7	10.7	17.7	0.0	9.4
Marital dissolution/separation	0.3	0.1	0.0	0.0	0.0	0.2
Method–related reasons						
Side effects	32.8	38.4	52.3	7.1	0.0	32.5
Health concerns	8.7	13.5	8.1	0.0	3.7	9.6
Lack of access/too far	1.3	0.0	3.4	3.6	0.0	1.1
Cost too much	0.0	0.0	1.4	0.0	0.0	0.1
Inconvenient to use	0.3	1.0	3.5	6.2	8.1	1.3
Wanted more effective method	0.2	0.0	0.0	14.2	0.0	0.5
Other reasons						
Husband disapproved	3.1	1.0	0.0	15.4	0.0	2.7
Fatalistic	0.2	0.5	0.7	0.8	0.0	0.3
Other	3.9	2.3	9.8	0.0	54.0	6.3
Don't know	0.1	0.0	0.0	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number of segments	484	349	57	32	55	977

Reasons for not using family planning at time of the interview

Information on the main reason for nonuse was collected from all respondents who were not using family planning at the time of the survey. Table 7 describes the main reason for nonuse among women who have been identified as having an unmet need of family planning from a child survival perspective. The results in Table 7 coupled with those presented in Table 6 are important in obtaining a better understanding of the factors that contribute to unmet need in Egypt.

Among currently married women in need of family planning from a child survival perspective, more than 2 in 5 reported that they were not using because they were breast-feeding. Lack of exposure to the risk of becoming pregnant also was a major reason for nonuse among these women. More than one-third of women in need were not practicing family planning because they were pregnant (10 percent), considered themselves to be unable to have children (3 percent), or because they did not have sex or had sex infrequently (11 percent). Another 6 percent were not using family planning at the time of the survey because of a desire for more children.

Health concerns or fear of side effects kept 14 percent from practicing contraception. It should be noted that relatively few of the women gave other method-related reasons (e.g., lack of

Table 7 Main reason for not using family planning

Percent distribution of women with an unmet need for family planning from a
child survival perspective by main reason for not using family planning,
according to child survival risk category, Egypt 1995

Main reason for not using family planning	Short interval birth	High order birth	Short interval and high order birth	In any risk category
Fertility-related reasons				
Pregnant	8.3	17.4	2.6	10.4
Wants more children	8.9	4.2	2.7	6.1
Not having sex	3.0	5.5	1.1	3.5
Infrequent sex	5.7	11.6	3.5	7.3
Menopausal/hysterectomy	0.0	0.9	0.0	0.3
Subfecund/infecund	0.3	5.9	0.9	2.4
Postpartum/breastfeeding	61.8	10.4	63.1	44.1
Method–related reasons				
Side effects	2.4	12.6	9.0	7.2
Health concerns	1.6	14.8	2.5	6.4
Lack of access/too far	0.1	0.0	0.0	0.0
Cost too much	0.1	0.3	0.7	0.3
Inconvenient to use	0.6	0.7	0.1	0.5
Interferes with body	0.2	0.5	0.3	0.3
Opposition to use				
Respondent disapproved	0.0	0.7	0.5	0.4
Husband disapproved	1.4	2.9	4.7	2.5
Other opposed	0.2	0.1	0.6	0.2
Religious prohibitions	0.6	0.8	1.4	0.8
Lack of knowledge				
Knows no method	0.1	0.0	0.0	0.1
Knows no source	0.0	0.7	0.2	0.3
Other	4.7	9.0	5.1	6.3
Don' t know	0.2	0.7	1.1	0.6
Total	100.0	100.0	100.0	100.0
Number of women	1,139	852	453	2,444

access, etc.). The proportions citing religious prohibitions, opposition from the husband or other
individuals, or lack of knowledge were also small.

Differences in the distribution of reasons of nonuse by risk category are also shown in
Table 7. They follow expected patterns. Around 6 in 10 women with unmet need who were in
the short birth interval category or in both risk categories said that they were not practicing
family planning because they were postpartum or breastfeeding compared to 1 in 10 women in
the high order birth category. Women in the high order birth risk category were more likely than
women at risk of a short birth interval or women in both categories to say that they were not
having sex or having sex infrequently. Almost none of the women in the other risk categories
gave these reasons for nonuse.

Finally, health concerns and fear of side effects were mentioned more frequently among women at risk of a high order birth (27 percent) or in both risk categories (12 percent) than by women in the short birth interval category (4 percent).

6   Attitudes towards Childbearing and Family Planning

In addition to insights into aspects of the prior family planning experience, the DHS results provide information on a number of factors that are important in assessing the likelihood that a woman who is in need for family planning will adopt a method. These include women's attitudes towards childbearing and approval of the use of family planning. In addition, the DHS obtained information on the woman's intention to use family planning. Women who indicated that they did not intend to use were also asked a question on the main reason they had for not planning to adopt family planning in the future. Again the responses to this question shed some light on the barriers to use.

Childbearing attitudes

Information on a woman's attitude toward childbearing provides some measure of the level of motivation that the woman may have for using family planning. Table 8 looks at several measures of the childbearing attitudes and intentions among women with an unmet need for family planning from a child survival perspective. The table allows us to identify those women with an unmet need for family planning to meet their own childbearing goals as well as to avoid a birth in which there is increased mortality risk for the child.

Many of the women with an unmet need for family planning from a child survival perspective had already achieved or exceeded the family size they considered ideal. Table 8 indicates that in the case of more than half of the women in need, the number of living children that they currently had was equal to or exceeded the number they regard as ideal.

The likelihood that a woman in need had attained her ideal family size varied by risk category. More than half of the women in the high order birth and the multiple risk categories had more children at the time of the interview than they considered ideal. Fewer women in the short interval risk category had more children that they reported as ideal; however, even for this group, 1 in 10 had more children than their ideal number. In addition, around 1 in 4 women in the short birth interval category and more than 1 in 10 women in the other two risk categories had the number of children that they considered ideal at the time of the survey.

Table 8 also shows the distribution of currently married women in the various risk categories by the desire for an additional child at the time of the survey. Overall, around two-thirds of the women in need wanted no more children, and 24 percent wanted to wait 2 or more years before having another child.

Table 8 Childbearing attitudes

Percent distribution of currently married women 15-49 with an unmet need for family planning from a child perspective by the fertility planning status of the last birth, the comparison of the women's ideal and actual family size, and the women's current childbearing desire, according to the type of need, Egypt 1995

Childbearing attitudes	Short interval birth	High order birth	Short interval and high order birth	In any risk group
Fertility planning status of last birth				
Last birth wanted	80.2	35.0	43.2	57.6
Last birth wanted but mistimed	11.9	2.8	7.1	7.9
Last birth not wanted	7.5	34.6	49.7	24.7
Unsure about desire/No birth in five-year period before survey	0.4	27.6	0.0	9.8
Ideal vs. actual family size				
Actual > ideal	11.4	53.0	51.8	33.4
Actual = ideal	28.1	11.1	14.0	19.6
Actual < ideal	52.8	15.6	16.4	33.1
Not sure	7.8	20.2	17.8	14.0
Desire for more children				
Wants another soon	8.0	6.0	2.6	6.3
Wants to delay 2 or more years	44.0	3.8	8.9	23.5
Wants, unsure when	2.2	1.8	0.7	1.8
Wants no more	39.9	84.3	84.4	63.6
Uncertain if wants	5.7	3.1	3.3	4.3
Declared infecund	0.2	1.0	0.2	0.5
Total	100.0	100.0	100.0	100.0
Number of women	1,140	852	453	2,446

The desire for another child was strongly related to the number of children a woman had. Thus, it is not surprisingly that women in the high order birth risk category and the multiple risk category were much more likely to want no more children than women in short interval category. Eight in 10 women in the former categories wanted no more children compared to 4 in 10 women in the short interval category. Among women in short interval risk category, there was, however, clear interest in delaying the next birth. More than 40 percent of the women in the short birth interval group wanted to delay the next birth for 2 years or more.

Attitude toward family planning use among women and their husbands

One of the determinants of whether a woman with an unmet need for family planning will adopt a method is the attitude that she has about family planning use. The opinion of her husband also is likely to influence a woman's willingness to adopt family planning. In the 1995 DHS, women were asked both about their own attitude about family planning use and about whether they thought that their husbands approved of the use of family planning. Table 9 examines the level of approval of family planning among women with an unmet need for family planning from a child survival perspective by the women's own attitude toward family planning

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use and the women's perception of their husband's attitude according to child survival risk category.

Table 9   Approval of family planning use

Percent distribution of women with an unmet need for family planning from a child survival perspective by the woman's own attitude toward family planning use and the women's perception of her husband's attitude toward family planning use, according to child survival risk category, Egypt 1995

Family planning Approval	Short interval birth	High order birth	Short interval and high order birth	In any risk category
Both approve	74.5	65.4	68.8	70.2
Woman approves				
Husband disapproves	7.2	13.5	12.9	10.4
Husband's attitude not known	7.3	5.5	5.2	6.3
Women disapproves				
Husband approves	1.1	1.5	1.0	1.2
Husband's attitude not known	0.9	2.1	1.0	1.3
Both disapprove	5.8	7.1	5.9	6.2
Other	3.3	5.0	5.3	4.2
Total percent	100.0	100.0	100.0	100.0
% of women approving of FP use	89.0	84.4	86.9	86.9
% of women saying husband approves	76.5	69.0	70.8	72.7

In the majority of cases, both the woman and her husband were reported to approve of family planning. Overall, over eight in ten women with an unmet need for family planning said that they approved of a couple using family planning, and only 1 in 10 women said they disapproved. Most of women felt that their husband approved of using family planning. Only 17 percent of women believed that their husbands disapproved of family planning, while 7 in 10 women said their husbands approved. The likelihood that both partners approved of family planning was greater among women who were in need to avoid a short interval birth than among women in the other risk categories. Seventy-five percent of couples at risk of a short interval birth were reported as approving of the use of family planning compared to 65 percent of couples at risk of a high order birth and 69 percent at risk of both a short interval and high order birth.

Differences in the level of disapproval of family planning among women in the various risk categories were generally minor. The level of disapproval among women themselves was slightly lower among women at risk of a short interval birth (8 percent) than among women in the high order birth risk category (11 percent) and similar to women in the multiple risk category (8 percent). Women at risk of a short interval birth were also less likely than women in the other two risk categories to believe that their husband disapproved of family planning.

7   Future Use of Family Planning

Intention to use

To assess future plans with regard to family planning, currently married women who were not using a contraceptive method were asked in the 1995 DHS about their intention to adopt family planning methods in the future. Table 10 shows the percent distribution of women with an unmet need for family planning from a child survival perspective by their intention to use family planning in the future according to selected background characteristics.

Table 10 Intention to use family planning

Percent distribution of women with an unmet need for family planning from a child survival perspective by the woman's intention to use family planning in the future, according to selected background characteristics, Egypt 1995

Background Characteristics	Intended to use in next 12 months	Intended to use later	Intended to use, unsure about timing	Unsure about using	Did not plan to use	Total percent	Number of women
Age							
15-19	54.2	30.1	1.7	4.4	9.6	100.0	158
20-24	60.2	22.9	2.0	4.8	10.1	100.0	460
25-29	57.2	20.4	2.5	6.4	13.5	100.0	513
30-34	58.5	16.3	2.0	5.8	17.4	100.0	482
35-39	51.8	12.6	2.9	4.6	28.2	100.0	422
40-44	44.6	8.5	1.9	2.1	42.8	100.0	250
45-49	21.6	4.3	0.0	3.0	71.1	100.0	156
Urban-rural residence							
Urban	63.0	15.7	2.7	2.9	15.6	100.0	683
Rural	49.6	17.6	1.8	5.6	25.3	100.0	1,757
Place of residence							
Urban Governorates	58.0	16.6	3.9	4.7	16.8	100.0	290
Lower Egypt	68.4	11.2	2.4	3.1	14.9	100.0	768
Urban	72.0	10.0	3.8	0.0	14.3	100.0	158
Rural	67.5	11.6	2.0	3.9	15.0	100.0	611
Upper Egypt	44.0	20.5	1.6	5.9	28.1	100.0	1,382
Urban	63.2	18.5	0.7	2.7	15.0	100.0	235
Rural	40.0	20.9	1.7	6.6	30.8	100.0	1,147
Education							
No education	48.7	16.0	1.8	5.5	28.1	100.0	1,394
Some primary	53.8	17.1	1.0	5.2	22.9	100.0	493
Comp. primary/some secondary	60.7	20.2	3.6	2.0	13.5	100.0	249
Comp. secondary/higher	68.0	19.8	3.8	4.0	4.5	100.0	304
Total	53.3	17.1	2.1	4.9	22.6	100.0	2,440

More than 70 percent of the women in need intended to use family planning in the future, 23 percent did not plan to use in the future, and the rest were unsure about their intentions. Three-fourths of those who intended to use family planning were planning to adopt a method within a year (12 months) after the survey.

The percentage intending to use family planning varied with age. Women under age 40 were more likely to intend to use than are older women. The percentage who did not plan to use was especially high among women age 40 and older. Older women may not be concerned about using family planning since they may believe that it will be difficult for them to become pregnant.

Eighty-one percent of urban women were planning to use in the future compared with 69 percent of those living in rural areas. By place of residence, the percentage who intended to use varied from 63 percent in rural Upper Egypt to 86 percent in urban Lower Egypt.

The intention to use also varied with the level of education of the woman. Among women who have completed secondary education and higher, more than 9 in 10 intended to use at some time in the future. In contrast, two-thirds of the women with no education planned to use in the future.

Reason for not planning to use family planning

The results in Table 10 show that many women with an unmet need for family planning from a child survival perception did not intend to use contraceptives in the future. The main reasons that this group of women gave for not planning to use family planning in the future are presented in Table 11. Since a woman's age is likely to be related to reasons for nonuse of family planning, women are classified in Table 11 into two age groups: under age 30 and age 30 and over.

Overall, 33 percent of nonusers cited fear of side effects or health concerns as reasons for not planning to use in the future. A higher percentage of older women mentioned health concerns as a reason for not planning to use than younger women (20 percent and 6 percent, respectively). Older women were also somewhat more concerned than younger women about side effects (19 percent and 12 percent, respectively).

The desire to have another child was cited by 15 percent of the women as the main reason that they did not plan to use family planning. As expected, the proportion who gave this reason was four times higher among younger women than among older women (33 and 8 percent, respectively). Also, as expected, older women were more likely than younger women to cite concerns about their ability to become pregnant or to say they had sex infrequently.

Husband's opposition was also cited more frequently by younger than older women.

Table 11 <u>Main reason for not planning to use family planning</u>

Percent distribution of women with an unmet need for a family planning from a child survival perspective by main reason for not planning to use using family planning according to age, Egypt 1995

Main reason for not planning to use a method	15-29	30-49	Total
Fertility-related reasons			
Wants more children	32.5	7.5	14.7
Infrequent sex	6.0	10.2	9.0
Menopausal/Had hysterectomy	0.0	2.0	1.4
Subfecund/infecund	2.0	9.0	7.0
Method-related reasons			
Side effect	12.3	18.8	16.9
Health concerns	5.8	19.9	15.9
Cost too much	1.6	0.2	0.6
Inconvenient to use	0.1	1.2	0.9
Interfere with body	0.7	0.4	0.5
Opposition to use			
Respondent opposed	0.2	2.2	1.6
Husband opposed	10.6	7.0	8.0
Other opposed	1.0	0.0	0.3
Religious prohibitions	5.4	2.6	3.4
Lack of knowledge			
Knows no method	0.5	0.1	0.2
Knows no source	0.7	0.4	0.5
Other	10.5	14.5	13.4
DK	10.3	4.2	5.9
Total	28.7	71.3	100.0
Number of women	193	478	671

8   Opportunities To Provide Information /Counseling

One of the basic questions which family planning programs face in attempting to serve women with an unmet need for family planning concerns the opportunities that exist to provide these women with information and counseling. The 1995 DHS obtained information on two aspects of this question:

- the extent to which women are being reached by information, education, and communication (IE&C) efforts; and

- the extent to which women have had recent contacts with health providers or outreach workers.

Components IE&C program in Egypt

IE&C programs have played a vital role in the success of the Egyptian family planning program. Strong governmental support had created a positive environment conducive to the achievement of population objectives. During the 1960s and 1970s, IE&C activities in Egypt concentrated on raising the level of public awareness about the population situation and overall

knowledge of family planning. In the late 1970s, a national committee for coordinating IE&C activities was established under the leadership of the Information, Education and Communication (IE&C) Center of Ministry of Information (MOI)/State Information Service (SIS). The center had the following responsibilities:

- to heighten public awareness of the economic need to limit family size, to increase knowledge of the contraceptive methods and to remove prejudice or bias against the practice of family planning;

- to change people's attitudes toward large-size families and motivate them to use contraceptive methods;

- to affect people's behavior and raise the rate of contraceptive prevalence among them.

Mass media, especially TV, plays a central role in the Egyptian IE&C program, reaching low literacy audiences throughout the country. Other media such as radio and newspapers and other communication forms like seminars and interpersonal communication are also widely used channels for getting messages about family planning to their intended audiences.

Sources of family planning information

To obtain some insight into the types of sources of family planning information that are influencing women's decisions, the 1995 DHS included questions regarding whether women had heard a message about family planning through any of various broadcast or print media in the few months prior to the DHS interview. Table 12 examines the coverage of family planning through both broadcast and print media among women with an unmet need for family planning from a child survival perspective.

Three in 4 women in need were recently exposed to family planning information broadcast on television or radio. Television reached a broader audience than radio; 73 percent of women saw a family planning message on television compared to 53 percent who had heard a message on the radio. Messages communicated through print media reached a smaller audience than messages broadcast on television or radio. Overall, 19 percent of women in need had been exposed recently to a family planning message through a print source.

Age differences in exposure to family planning messages on broadcast media were generally small, but the youngest or the oldest age groups were definitely less likely to have been exposed to messages through the print media. Urban women were more likely than rural women to have been exposed to either broadcast media (89 percent for urban versus 71 percent for rural) or print source (32 percent for urban versus 14 percent for rural). By place of residence, women residing in the Urban Governorates had the highest percentages watching television messages or listening to messages on the radio (91 percent) while women in rural Upper Egypt had the lowest percentage (68 percent). As for print media exposure, women rural Upper Egypt had the least exposure (10 percent). Women's education was positively associated with their media exposure, especially regarding print source.

Table 12 Exposure to family messages through broadcast and print media

Percentage of women with an unmet need for family planning from a child survival perspective who were exposed to family planning messages through either broadcast or print media in the few months prior to the DHS interview, according to selected background characteristics and type of media, Egypt 1995

Background characteristics	Broadcast media			Print media				
	Television only	Radio only	Both television and radio	Newspaper/ magazine	Poster	Leaflet/ brochure	Any print source	Number of women
Age								
15-19	21.5	1.7	52.3	7.7	10.3	5.1	15.7	158
20-24	20.8	2.8	58.8	13.5	15.3	5.4	24.3	461
25-29	25.7	2.0	49.8	11.1	14.9	6.0	20.4	514
30-34	24.5	3.0	44.7	11.1	14.1	4.7	18.9	483
35-39	20.7	3.5	47.1	6.4	10.9	4.6	15.4	423
40-44	20.2	5.1	48.8	5.3	12.9	5.7	16.1	250
45-49	23.6	1.8	53.6	7.6	10.6	2.5	13.4	156
Urban-rural residence								
Urban	23.4	2.4	63.1	20.3	22.9	7.8	31.9	687
Rural	22.5	3.1	45.3	5.6	9.6	4.0	13.7	1,759
Place of residence								
Urban Governorates	25.5	4.0	61.3	17.9	19.3	4.2	26.9	290
Lower Egypt	21.7	2.1	53.8	12.0	16.4	5.0	24.1	774
Urban	25.6	1.2	58.3	25.7	25.9	7.3	38.4	162
Rural	20.7	2.4	52.6	8.4	13.9	4.4	20.3	612
Upper Egypt	28.1	3.1	46.1	6.7	10.4	5.3	14.2	1,382
Urban	19.3	1.3	68.4	19.6	25.3	12.7	33.5	235
Rural	23.4	3.4	41.5	4.1	7.3	3.7	10.2	1,147
Education								
No education	23.6	3.6	42.7	1.4	7.7	2.5	9.4	1,399
Some primary	23.5	2.9	49.2	3.6	14.1	3.1	16.4	493
Comp. primary/some secondary	17.5	2.2	72.5	21.6	23.3	11.3	32.0	249
Comp.secondary/higher	21.6	0.2	69.1	48.3	29.8	14.9	55.0	305
Total	22.7	2.9	50.3	9.7	13.3	5.1	18.8	2,446

Contact with health facilities /FP workers

Table 13 shows the percentages of women with an unmet need for family planning from a child survival perspective who were visited in the home by a family planning outreach worker or who had gone to a health facility during the 12 months preceding the survey. The table also shows the percentage who had actually talked about family planning either with the outreach worker or with staff at a health facility.

Thirteen percent of the women in need were visited in the home by a family planning worker. One in 4 of the women visited a public health facility at least once during that period, and 1 in 3 visited a private health facility. Overall, around half of the women in need of family planning had had some form of contact with a family planning worker or health facility.

Table 13 Contacts with family planning workers or health providers

Percentage of women with an unmet need for family planning from a child survival perspective who were visited in the home by a
family planning outreach worker, the percentage who had visited a public or private health facility, and the percentage who
discussed family planning with the outreach worker or staff at a health facility during the 12 months preceding the survey, by
selected background characteristics, Egypt 1995

Background characteristics	Visited in home by FP worker	Visited public health facility	Discussed family planning during visit to public facility	Visited private health facility	Discussed family planning during visit to private facility	Had contact with FP worker/ health facility	Discussed FP with FP worker/ during visit to facility	Number of women
Age								
15-19	8.2	34.1	11.2	36.3	12.7	55.5	14.9	158
20-24	11.5	28.2	21.9	36.5	10.2	54.9	16.5	461
25-29	12.4	24.5	22.0	30.3	12.4	50.9	18.8	514
30-34	14.5	29.3	22.3	31.6	14.8	56.2	21.5	483
35-39	14.7	24.8	18.7	26.3	17.7	48.3	20.6	423
40-44	15.1	22.7	15.1	28.0	19.2	48.8	20.4	250
45-49	20.1	22.0	15.4	26.7	19.6	50.8	25.3	156
Urban-rural residence								
Urban	6.7	34.0	22.6	41.8	17.9	63.4	17.0	687
Rural	16.2	23.6	18.0	26.7	12.0	48.0	20.6	1,759
Place of residence								
Urban Governorates	3.1	44.4	14.2	40.8	15.1	70.9	14.2	290
Lower Egypt	8.8	23.4	19.8	35.9	14.7	52.0	16.4	774
Urban	5.7	22.8	15.9	46.8	14.1	57.4	12.2	162
Rural	9.6	23.6	20.9	33.0	14.9	50.6	17.5	612
Upper Egypt	18.4	24.5	21.7	26.1	13.6	48.6	22.5	1,382
Urban	11.8	28.9	42.1	39.5	24.7	58.4	23.7	235
Rural	19.8	23.5	16.5	23.4	9.7	46.6	22.2	1,147
Education								
No education	15.2	24.5	18.1	24.4	11.1	47.1	19.5	1,399
Some primary	14.8	26.5	24.3	28.1	17.2	52.9	22.1	493
Completed primary/ some secondary	10.6	32.1	27.4	40.5	16.5	59.1	19.9	249
Completed secondary/higher	6.5	31.3	12.4	58.0	16.6	70.0	15.3	305
Number of women	13.5	26.5	19.7	30.9	14.2	52.3	19.6	2,446

There are clear differentials in the proportions of women in need who had had some contact with health providers. Overall, urban women and more highly educated women were more likely to have had some contact with health providers during the 12 months before the survey. However, the results in Table 13 indicate that the likelihood of contact varied somewhat according to the type of provider. Rural women were more likely to have visited in the home by a family planning worker than urban women. On the other hand, urban women, especially women living in the Urban Governorates, were much more likely than rural women to have been to a health facility (either public or private) than rural women.

Table 13 also shows that there was an inverse relationship between a woman's educational level and the likelihood of having been visited in the home by a family planning worker; women with no education being more than twice as likely to have been visited by an FP worker than women who had completed secondary school or higher. In contrast, the proportion of women in need who had visited a health facility varied directly with the woman's educational status.

Finally, Table 13 shows that there was considerable variation in the likelihood that a woman with an unmet need for family planning from a child survival perspective would have discussed family planning with outreach workers or health personnel during the period before the survey. Overall, relatively few (20 percent) of the women in need had talked about family planning with an outreach worker or other health care provider. Somewhat surprisingly, rural women were more likely than urban women to report having had a discussion of family planning with health personnel. This relationship is in large measure due to the more extensive contact with family planning outreach workers among women living in rural areas compared to those in urban areas. A greater proportion of women living in Upper Egypt also reported having had a discussion of family planning than women living in other areas. Again this pattern is related to the fact that women in Upper Egypt had a greater likelihood of having been visited by a family planning outreach worker than women in other regions.

9 Summary and Conclusion

In this paper, an attempt has been made to examine the profile of women with an unmet need for family planning from a child survival perspective. The criteria chosen —risk of a short birth interval and risk of a high order (6 or more) birth—represent two factors associated with substantially elevated mortality among young children in Egypt. Overall, at the time of the 1995 DHS, around 2 in 5 currently married women in Egypt fell into one or both of these risk categories. A significant proportion of the women in these child survival risk categories were using family planning. However, more than 1 in 6 married women fell into one of the child survival risk categories and was not using family planning. For purposes of this study, these women were defined as having an unmet need for family planning from a child survival perspective.

The majority of the women defined as having an unmet need for family planning from a child survival perspective were rural residents, under age 40, and had not attended school. Nearly two-thirds of the women with an unmet need had given birth within a 24-month period before the survey. One in 10 was pregnant at the time of the interview.

Nearly 3 in 4 of the women defined as having an unmet need were not practicing family planning at the time of the interview largely because they perceived themselves to be at low risk of becoming pregnant. The majority of the women who perceive themselves at low risk of pregnancy were breastfeeding or reported that they had sex infrequently. Together these women represented almost 10 percent of all married women in women in Egypt. Although these women may not need to adopt a method immediately, they are in need of counseling about the contraceptive options available and appropriate to their status. In particular, breastfeeding mothers are in need of advice as to the time at which they should begin using a contraceptive method.

Although fertility-related reasons for nonuse were common among women with an unmet need, a significant proportion of the women gave other reasons for not using. Chief among these reasons were fears about method side effects and health concerns. Again counseling is important in addressing the concerns these women have about using contraceptive methods.

Overall, the results in this paper indicate that most of the women defined as having an unmet for family planning from a child survival perspective need to receive counseling as to the available contraceptive options. Efforts to reach these women can build upon the fact that, as the results in the paper suggest, the vast majority want to avoid or delay future births and approve of the use of family planning.

In summary, the findings of this paper suggest that a substantial proportion of women in Egypt (18 percent) have an unmet need for family planning from a child survival perspective, i.e., from the perspective of helping women to avoid births in which the child is at a significantly elevated risk of dying. The following are recommendations as to a number of concrete steps that might be taken in addressing this need:

- Efforts to integrate family planning services and counseling into postpartum care and into child health services should continue in order to reach women with unmet need;

- IE&C programs should emphasize the health benefits of avoiding short interval and high order births through print and broadcast media,;

- Campaigns to both educate women about the family planning sources available in their community and to address misperceptions about contraceptive methods are needed;

- The family planning program should provide training for health care workers in order to develop or improve the counseling skills required to motivate nonusers to adopt family planning;

- Additional research is needed about the reasons for nonuse family planning and constraints on contraceptive choices, particularly for women age 30 and over, rural residents, and women with no education.

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Stunting among Egyptian Children:
Differentials and Risk Factors

by

Magued I. Osman

Growth assessment is one of the best available tools for determining the health and nutritional status of children because disturbances in health and nutrition, regardless of their etiology, invariably affect child growth (De Onis and Habicht, 1996). Childhood undernutrition is usually linked to inadequate food intake, repeated and severe infections, or both. In turn, these conditions are closely related to poor living standards, especially inadequate health care, unsanitary drinking water, and substantard housing. Undernutrition is also related to demographic determinants such as birth interval, residence and mother's education (Osman, 1990 and Sommerfelt and Stewart, 1994).

The purpose of the present paper is to provide a better understanding of the nutritional status of Egyptian children. Many Egyptian children exhibit the effects of nutritional deficiencies. Results from the third round of the Demographic and Health Survey (DHS) in Egypt indicate, for example, that the level of stunting among children below 5 years' was 30 percent in 1995 (El-Zanaty et al., 1996). This paper will look at differentials in undernutrition by age and residence and explore the determinants associated with stunting and severe stunting.

1   Data and Methods

Measurement of nutrition status

Anthropometry is widely used as a tool to measure the nutritional status on a micro level (individual) or on a macro level (community). Anthropometric data collected in the 1995 Egypt DHS will be used to examine patterns of undernutrition among children under age 5 in Egypt. The sample for the 1995 DHS included over 15,000 households. To assess nutritional status, all children of women interviewed in the households sampled for the DHS who were less than 5 years old were weighed and measured. Children younger than 24 months were measured lying on a measuring board (recumbent length) while standing height was measured for older children. Eligible children were weighed and measured by interviewers who were specially trained to obtain the anthropometric measures. The training and measurement procedures followed the United Nations guidelines and recommendations (United Nations, 1986).

Anthopometric measurements were not collected for children whose mothers were dead, institutionalized, or not interviewed for any other reason. Children who were ill, sleeping, or away from the household also were not measured. In addition, children without a reported month of birth are excluded from the following analysis as are children whose height and/or weight measures are considered to be implausibly high or low. Overall, data on anthropometric measures are available for 9,766 children out of a total of 10, 689 children below 5 years who were eligible for the height and weight data collection in the 1995 DHS.

In assessing the effects of poor nutrition on growth, three indices are usually used: height-for-age, weight-for-age, and weight-for-height. Although these indices are related, each has a specific meaning in terms of the process or outcome of growth impairment. Height-for-age reflects achieved linear growth. A deficit in this measure indicates a state of *stunting*, which is usually the outcome of long-term, cumulative inadequacy of health or nutrition. Weight-for-age reflects body mass relative to chronological age. A deficit in this measure indicates a state of *underweight*. Weight-for-height reflects body weight relative to height. A deficit in this measure indicates a state of *wasting* which reflects significant weight loss, usually as a consequence of chronic dietary inadequacies or disease (WHO, 1995).

To evaluate nutritional status, the values of the anthropometric indices on the individual level are compared to international reference growth curves. The World Health Organization (WHO) recommends use of the U.S. National Center for Health Statistics/Center for Disease Control (NCHS/CDC) growth reference curves as an international reference. The NCHS/CDC curves are based on measurements obtained from a well nourished and healthy population growing under optimal environmental conditions. The international growth reference developed by NCHS and CDC serves the useful purpose of providing a single set of growth references that permit comparison of growth data from different populations.

For purpose of comparison, anthropometric data are expressed in terms of standard deviations from the median (or Z-scores) of the reference population of the same age and sex.[1] For the various commonly used anthropometric indices (i.e., height-for-age, weight-for-height and weight-for-age), a Z-score that is below minus (-) 2 standard deviations from the median value in the reference population reflects a state of stunting, wasting, and underweight, respectively. Similarly a Z-score below –3 standard deviations from the reference population median reflects a state of <u>severe</u> stunting, wasting, or underweight. In a well-nourished population, the values of the various anthropometric indices will fall below the cut-off of –2 standard deviations in the case of 2.3 percent of children. An observed percentage that is higher is taken as an indication of the extent of the prevalence of poor nutrition in a population.

Study methods and data

Results of the 1995 DHS indicate that 30 percent of children under age 5 in Egypt were stunted, i.e., short for their age. The proportion of children classified as underweight is 12 percent. Wasting is less common among Egyptian children (5 percent), reflecting a low prevalence of acute under-nutrition. Figure 1 illustrates how height-for-age, weight-for-age and weight-for-height Z-scores derived from the 1995 DHS data vary with the child's age. To reduce expected fluctuations, moving averages for consecutive 3-month age groups were calculated and used in the figure.

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[1] For purposes of this paper, the NCHS/CDC reference population normative values are used; to facilitate the Z-score comparisons, the NCHS/CDC growth reference curves were transformed into Z-scores with approximately Gaussian distribution (Dibley et al., 1987a,b).

Figure 1
Height-for age, weight-for-age, and weight-for-height
z-score moving averages,
Egypt 1995
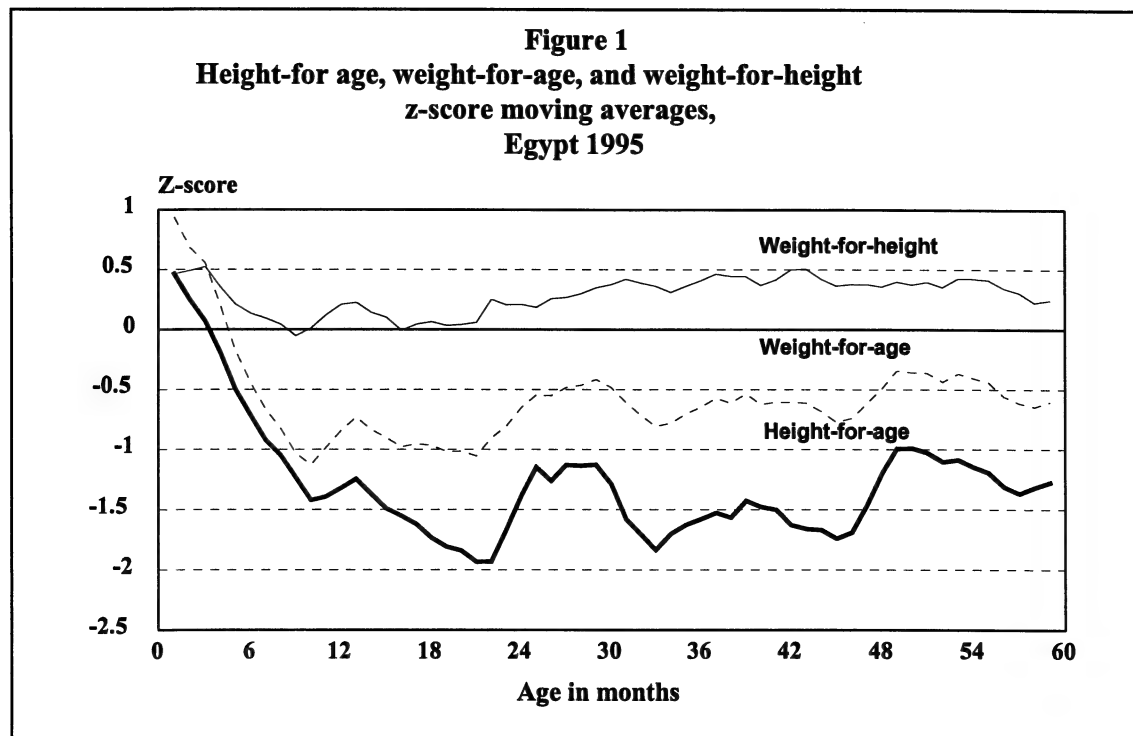
As shown in Figure 1, the nutritional indices of very young children in Egypt at the time of the 1995 DHS compared quite well with those for the international reference population. In fact, for children under 3 months of age, the mean Z-scores calculated for the height-for-age, weight-for-age, and weight-for-height indices were 0.5, 0.9 and 0.5 standard deviation units, respectively, above the mean values for those indices in the reference population. The situation for older children was not as favorable.

Figure 1 shows a very rapid deterioration in the anthropometric indices among children age 3 months and older. In the case of height-for-age and weight-for-age, the mean Z-scores decreased sharply among older children, falling to a level –1.4 and –1.1 standard deviation units respectively below the values in the reference population for children 8 to 10 months. The height-for-age mean continued to decline, reaching a level of –2 standard deviation units for children approaching their second birthday.

Between ages 2 and 5 years, the mean Z-scores for height-for-age fluctuated around –1.5 units below the value for the reference population. In these age groups, the mean weight-for-age Z-scores ranged between –0.8 and –0.2 standard deviation units from the reference mean while mean weight-for-height Z-scores range from 0 to 0.5 standard deviation units from the reference mean.

To reduce heterogeneity among observations, the data used in the subsequent analysis are generally stratified according to residence (urban/rural) and age (6 to 23 months/24+ months). The 24-month cut-off point has been selected for two reasons. First, the pattern of stunting before age 2 is different from the pattern at older ages (see Figure 1). Secondly, the method of measurement differs for the two age groups (recumbent length for children below 24 months and standing height for older children). Children below 6 months are not included in the analysis,

since stunting did not seem to represent a major problem in this age group; according to the 1995 EDHS results, less than 7 percent were classified as stunted.

Several descriptive indicators are used first in the analysis that follows to assess the level of stunting including the mean, standard deviation, first quartile, median, and third quartile, percentage stunted, and percentage severely stunted. After these descriptive findings are reviewed, bivariate associations between stunting and demographic, socioeconomic and health variables are presented for each age-residence stratum. The following variables are included in the latter analysis: source of drinking water, type of toilet facility, flooring material, availability of electricity, number of household goods owned, maternal education, maternal work status, parents' consanguinity, previous birth interval, and antenatal care. These variables reflect the socioeconomic and health status of the environment of the child. They have been shown to be associated with child malnutrition in a number of developing countries including Egypt (Frongillo et al., 1997; Osman, 1990 and 1998; and Sommerfelt and Stewart, 1994).

Finally, logistic regression models incorporating the various risk factors were constructed for each age-residence stratum. The variables included in the final logistic models were significant at $p<0.05$ based on the chi-square test of the difference in the $-2\log$ likelihoods of the model with and without the variables included.

2   Level of Undernutrition

Differentials by residence

Using data from the 1995 DHS, Table 1 shows that the proportion of stunting was lower among children living in urban than rural areas (23 percent and 34 percent, respectively). The proportion varied according to the region from 18 percent in the Urban Governorates to 40 percent in rural Upper Egypt. The urban-rural gap was wider in Upper Egypt (27 percent vs. 40 percent) than in Lower Egypt (26 percent vs. 29 percent). This wider gap reflected the greater prevalence of severe stunting among children living in rural Upper Egypt (19 percent).

Table 1 Height-for-age (stunting) indicators by residence

Descriptive statistics for height-for-age Z-scores and percentage of children with moderate and severe stunting, by urban-rural residence and place of residence, Egypt 1995

Height-for-age (stunting) indicators	Urban	Rural	Urban Gover- norates	Lower Egypt		Upper Egypt		Total
				Urban	Rural	Urban	Rural	
Mean	-0.99	-1.43	-0.77	-1.12	-1.24	-1.24	-1.61	-1.25
Standard deviation	1.56	1.62	1.59	1.56	1.57	1.44	1.64	1.61
Number of children	3,856	5,912	1,795	937	2,870	1,064	3,005	9,766
25th percentile	-1.89	-2.44	-1.69	-2.01	-2.21	-2.09	-2.66	-2.25
Median	-0.95	-1.36	-0.81	-0.94	-1.16	-1.16	-1.59	-1.19
75th percentile	-0.03	-0.42	0.21	-0.09	-0.25	-0.29	-0.64	-0.25
% with moderate stunting	13.5	18.3	11.1	13.7	15.9	17.1	20.7	16.4
% with severe stunting	9.4	16.1	7.3	11.8	12.9	10.2	19.1	13.4

The mean height-for-age Z-score for children below 5 years was 1.25 standard deviation units below the international reference mean. Differentials in the mean Z-scores across regions were correlated with the prevalence of stunting. The highest and lowest mean Z-scores were recorded in the Urban Governorates (-0.77) and in rural Upper Egypt (-1.61).

Rural Upper Egypt also exhibited the greatest standard deviation in Z-scores, indicating the presence of a large number of children with extremely low scores. The comparatively poor status of children in Upper Egypt is further reflected in the values of the percentiles shown in Table 1. The 25th percentile ranged from a value of -1.69 in the Urban Governorates to –2.66 in rural Upper Egypt, while the 75th percentile ranged from a value of 0.21 in the Urban Governorates to –0.64 in rural Upper Egypt. The latter figures compare to a value of of 0.675 in the reference population.

The data on percentiles are illustrated in Figure 2. The figure shows that the inter-quartile range was equivalent across the five regions but wider than the range of the international reference population.

Figure 2
Height-for-age z-score percentiles by region, Egypt 1995
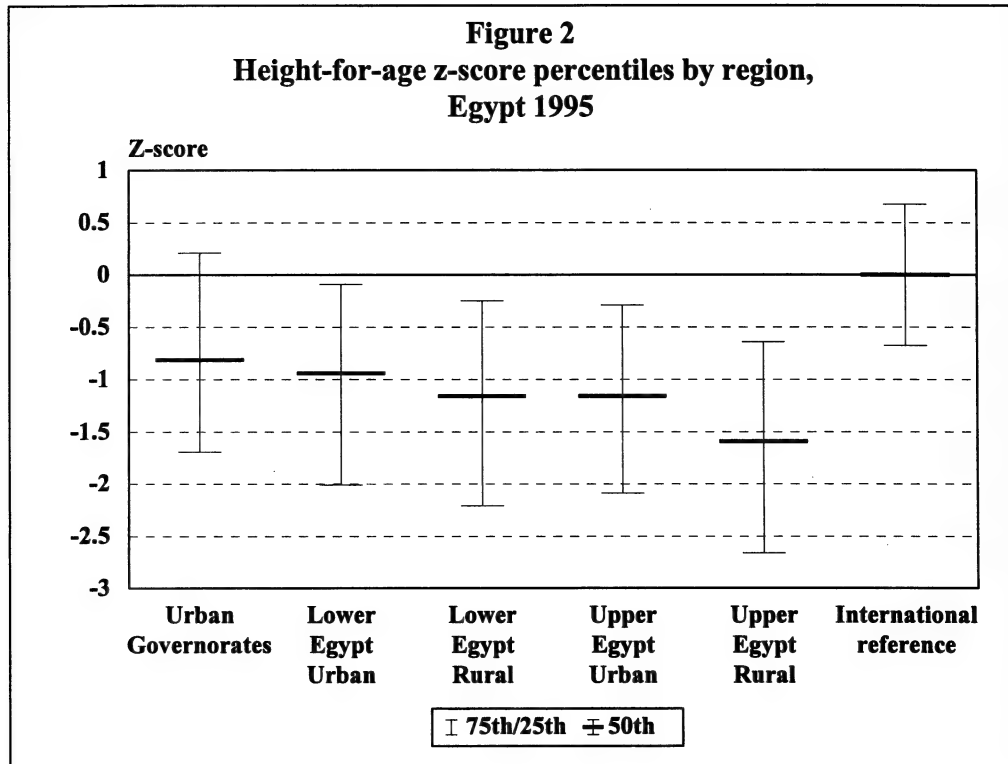
Differentials by age of the child and urban-rural residence

Figure 3 takes both age and urban-rural residence into account in looking at the patterns of stunting. The figure shows that height-for-age mean Z-scores for urban children were consistently higher than those recorded for rural children in all age groups. The gap between urban and rural areas was relatively narrow among newborns but widened with age, especially in the ages between 12 and 30 months. The deterioration in nutritional status among rural children after the first birthday was particularly rapid. A similar pattern was found when data on childhood nutrition from the 1992 DHS survey in Egypt were analyzed (Osman, 1996).

Figure 3
Height for age z-score moving averages,
by urban-rural residence,
Egypt 1995
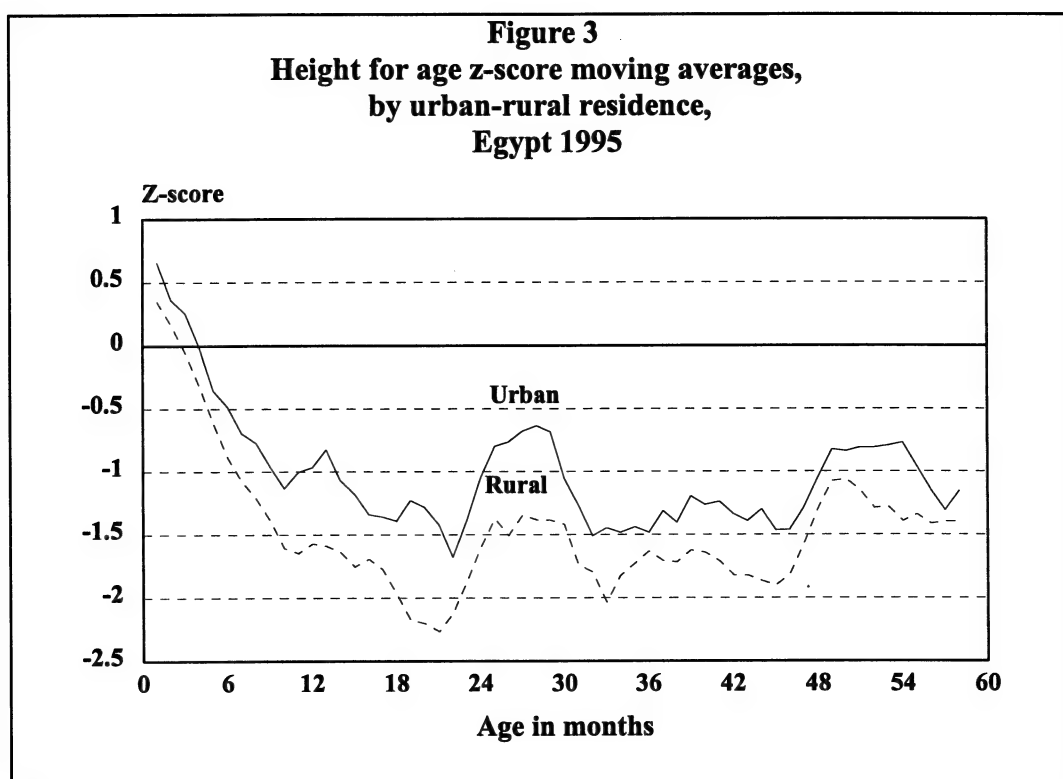
The results in Table 2 show that levels of stunting were consistently lower among urban than rural children in all age groups. For all age groups, the 25th, 50th and 75th percentiles were higher in urban than rural areas. The prevalence of stunting peaked among children in the age group 18-23 months, for both urban (35 percent) and rural areas (49 percent).

Table 2 Height-for-age (stunting) indicators by age of the child and urban-rural residence

Descriptive statistics for height-for-age Z-scores and percentage of children with moderate and severe stunting, by child's age and urban-rural residence, Egypt 1995

Height-for-age (stunting) indicators	Age of child (months)									
	0-5	6-11	12-17	18-23	24-29	30-35	36-41	42-47	48-53	54-59
Urban										
Mean	0.23	-0.92	-1.08	-1.47	-0.74	-1.37	-1.26	-1.45	-0.82	-1.08
Standard deviation	1.4	1.47	1.57	1.6	1.59	1.59	1.56	1.55	1.17	1.37
Number of children	397	424	411	374	376	326	404	375	361	408
25th percentile	-0.69	-1.74	-1.89	-2.46	-1.82	-2.34	-2.15	-2.51	-1.60	-1.81
Median	.19	-0.9	-1.05	-1.39	-0.72	-1.24	-1.18	-1.34	-0.82	-1.02
75th percentile	1.06	-0.12	-0.21	-0.51	-0.35	-0.34	-0.27	-0.26	-0.19	-0.19
% with moderate stunting	5.3	12.5	12.9	21.4	14.1	14.4	16.3	16.8	10.0	11.5
% with severe stunting	0	7.8	10.5	13.1	6.1	16.6	11.9	18.7	2.2	8.1
Rural										
Mean	0.02	-1.35	-1.65	-2.15	-1.39	-1.78	-1.67	-1.81	-1.17	-1.38
Standard deviation	1.41	1.58	1.52	1.62	1.80	1.74	1.48	1.60	1.23	1.21
Number of children	581	602	557	552	618	565	584	595	637	621
25th percentile	-0.85	-2.44	-2.70	-3.20	-2.69	-3.01	-2.48	-2.95	-1.96	-2.10
Median	0.06	-1.23	-1.59	-1.97	-1.51	-1.64	-1.63	-1.73	-1.16	-1.37
75th percentile	0.88	-0.3	-0.66	-1.04	-0.29	-0.7	-0.67	-0.81	-0.46	-0.61
% with moderate stunting	6.0	17.8	21.5	21.7	19.1	17.7	24.3	17.3	18.4	19.2
% with severe stunting	1.5	15.6	18.3	27.7	19.9	25.1	16.6	24.5	5.7	8.1
Total										
Mean	0.10	-1.17	-1.41	-1.87	-1.14	-1.63	-1.5	-1.67	-1.04	-1.26
Standard deviation	1.41	1.55	1.56	1.64	1.75	1.7	1.53	1.59	1.22	1.29
Number of children	978	1,024	968	926	994	890	987	970	998	1,029
25th percentile	-0.80	-2.12	-2.41	-2.82	-2.42	-2.73	-2.35	-2.72	-1.82	-1.96
Median	0.07	-1.10	-1.34	-1.77	-1.16	-1.44	-1.47	-1.58	-1.03	-1.23
75th percentile	0.94	-0.25	-0.5	-0.83	-0.03	-0.59	-0.52	-0.61	-0.33	-0.38
% with moderate stunting	5.70	15.5	17.9	21.7	17.1	16.5	21.1	17.1	15.3	16.1
% with severe stunting	0.90	12.4	15.0	21.8	14.7	21.9	14.6	22.3	4.4	8.1

Bivariate association

A two-way analysis of variance was used to test the significance of differences in the mean height-for-age Z-scores across residential categories (main effects) as well as the significance of the interaction effect between the residential variables. The analysis was repeated for four age groups. The results presented in Table 3 indicate that the differences between urban and rural areas and by region were not significant among children below 6 months. However, among children 6 to 11 months, significant differences in the mean height-for-age Z-scores were associated with both urban-rural residence and region ($p=0.019$ and 0.023). Moreover, among children in the second year of life, both urban-rural residence and region were even more

strongly associated with differences in mean height-for-age Z-scores. Considering the interaction between residence and region, significant effects were found only for the oldest cohort.

Table 3   Two-way analysis of variance: residence and region

Two-way analysis of variance tables for height-for-age Z-scores: residence and region, Egypt 1995

Variables	SS	df	MS	F	P-value
< 6 months					
Residence	13194	1	13194	0.723	.3950
Region	2259	1	2259	0.124	.7250
Interaction					
Residence x region	12810	1	12810	0.702	.4020
Residual	14388204	789	18236		
6-11 months					
Residence	127559	1	127559	5.487	.0190
Region	119923	1	11923	5.159	.0230
Interaction					
Residence x region	8172	1	8172	0.352	.5530
Residual	19061720	820	23246		
12-17 months					
Residence	211299	1	211299	10.041	.0020
Region	625915	1	625915	29.745	<.0005
Interaction					
Residence x region		1	45809	2.177	.1410
Residual	16203110	770	21043		
18-23 months					
Residence	352534	1	352534	15.898	<.0005
Region	1055291	1	1055291	47.589	<.0005
Interaction					
Residence x region	100500	1	100500	4.532	.0340
Residual	16121225	727	22175		

Residence: urban-rural
Region: Upper Egypt and Lower Egypt

3   Determinants of Stunting

The associations between stunting levels and a number of variables related to socio-economic and health status are examined for urban and rural areas in Tables 4 and 5, respectively. Odds ratios and corresponding 95 percent confidence intervals are estimated for each risk factor. The odds ratio quantifies the relative risk of stunting associated with the presence of risk factor. For example, an odds ratio of 2 for source of drinking water indicates that children living in households with no piped water were twice as likely to be stunted as children living in households with piped water. A confidence interval with a lower limit exceeding 1 indicates that the variable is significantly associated with stunting.

The results in Table 4 indicate that the association between stunting and the various risk factors differs across age-residence strata. In urban areas, antenatal care, parents' consanguinity and all five of the variables reflecting household living conditions were associated with stunting among children age 6-23 months. The odds ratio was particularly high (6.9) when the household had no electricity.

Table 4 Risk factors associated with stunting, urban Egypt

Percentage stunted*, odds ratios, and 95% confidence intervals for selected risk factors associated with stunting among urban children, by the child's age, Egypt 1995

| Risk factors | Category | Age of child | | | | | | | |
| | | 6-23 months | | | | 24-59 months | | | |
		Number	% stunted	Odds ratio	95% confidence interval	Number	% stunted	Odds ratio	95% confidence interval
Antenatal care	Yes	718	20.9			1,297	21.7		
	No	491	32.8	1.85	1.42, 2.40	951	27.9	1.39	1.15, 1.69
Birth interval	>= 4 years	740	23.8			1,256	22.5		
	< 4 years	469	28.8	NS		993	26.7	1.26	1.04, 1.53
Ownership of goods	3-6	668	21.7			1,317	21.6		
	1-2	404	28.5	1.44	1.07, 1.93	673	25.9	1.26	1.01, 1.58
	None	136	37.5	2.16	1.43, 3.26	258	33.7	1.84	1.36, 2.49
Parents' consanguinity	No	836	24.0			1,546	22.8		
	Yes	373	29.5	1.32	1.01, 1.74	703	27.6	1.29	1.05, 1.58
Source of drinking water	Piped	1,067	24.0			2,018	22.7		
	Not piped	142	38.7	2.00	1.39, 2.89	230	38.3	2.11	1.58, 2.80
Type of toilet facility	Flush toilet	1,175	25.1			2,174	23.9		
	No flush toilet	34	47.1	2.65	1.34, 5.27	75	37.3	1.90	1.18, 3.06
Floor materials	Wood or tiles	936	23.7			1,740	23.3		
	Other	273	32.6	1.56	1.16, 2.09	507	27.6	1.25	1.00, 1.57
Has electricity	Yes	1,199	25.4			2,218	23.9		
	No	10	70.0	6.87	1.77, 26.73	30	56.7	4.18	2.02, 8.65
Mother works for cash	Yes	255	27.8			468	19.9		
	No	954	25.2	NS		1,780	25.5	1.38	1.07, 1.77
Mother's educationl level	Higher	125	20.8			277	25.3		
	Secondary	563	24.2	NS		887	21.2	NS	
	Primary	260	26.9	NS		518	23.0	NS	
	No education	262	30.5	NS		566	30.0	NS	

* Height-for-age Z-score < -2SD from the mean of the reference population
NS – Not significant

Odds ratio greater than 2 were found among children living in households with no flush toilet, no piped water, and owning none of the household effects for which information was obtaineed in the survey. For children 24 months or older, two additional risk factors were significantly linked to stunting: mother's working for cash and the birth interval. For children in the older age group, lack of electricity and lack of piped water in the household were the factors with the strongest associations with stunting.

In rural areas, stunting among children in the 6-23 month age group was significantly associated with all of the variables except maternal work status. For this age group, odds ratios were highest in the case of the availability of electricity and ownership of households effects (Table 5). For children above two years living in rural areas, six variables were associated with stunting: antenatal care, birth interval, ownership of household effects, type of toilet facility,

floor material and electricity. The odds ratios for all of these variables were moderate, ranging from 1.21 to 1.36.

Table 5 <u>Risk factors associated with stunting, rural Egypt</u>

Percentage stunted*, odds ratios, and 95% confidence intervals for selected risk factors associated with stunting among rural children, by the child's age, Egypt 1995

		Age of child							
		6-23 months				24-59 months			
Risk factors	Category	Number	% stunted	Odds ratio	95% confidence interval	Number	% stunted	Odds ratio	95% confidence interval
Antenatal care	Yes	552	33.7			903	32.3		
	No	1,157	44.0	1.55	1.25, 1.91	2,717	36.9	1.22	1.04, 1.43
Birth interval	>= 4 years	746	37.1			1,402	33.0		
	< 4 years	965	43.4	1.30	1.07, 1.58	2,218	37.4	1.21	1.05, 1.40
Ownership of goods	3-6	229	31.9			494	31.0		
	1-2	650	32.3	NS		1,290	34.5	NS	
	None	830	49.6	2.11	1.53, 2.91	1,837	37.9	1.36	1.09, 1.69
Parents' consanguinity	No	862	37.4			1,819	36.1		
	Yes	847	44.0	1.32	1.09, 1.60	1,801	35.3	NS	
Source of drinking water	Piped	894	36.2			1,838	34.4		
	Not piped	816	45.5	1.47	1.21, 1.78	1,783	37.1	NS	
Type of toilet facility	Flush toilet	1,221	36.0			2,536	33.8		
	No flush toilet	489	52.4	1.96	1.58, 2.42	1,084	40.3	1.33	1.15, 1.54
Floor materials	Wood or tiles	353	30.9			716	30.3		
	Other	1,357	43.3	1.71	1.33, 2.19	2,904	37.1	1.35	1.14, 1.61
Has electricity	Yes	1,567	39.1			3,335	35.2		
	No	142	58.5	2.19	1.55, 3.10	284	42.3	1.35	1.06, 1.73
Mother works for cash	Yes	163	34.4			412	33.0		
	No	1,546	41.3	NS		3,209	36.1	NS	
Mother's educational level	Secondary +	395	31.4			731	33.7		
	Primary	357	40.9	1.51	1.11, 2.06	726	33.9	NS	
	No education	959	44.4	1.75	1.35, 2.26	2,163	37.0	NS	

* Height-for-age Z-score < -2SD from the mean of the reference population
NS – Not significant

It is well known that the variables are themselves highly correlated. To investigate further the determinants of undernutrition, therefore, a stepwise logistic regression[2] was conducted. This approach was used in order to identify the variables that best predict undernutrition, after partialing out the correlation between independent variables.

Results of the stepwise logistic regression (Table 6) indicate that, for children living in urban areas, antenatal care, maternal work status, source of drinking water and ownership of household effects were significant determinants of early stunting (6-23 months). For older

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[2] The logistic regression equations for stunting are presented in Appendix A.

children, the latter two variables were also significant determinants in addition to the availability of electricity in the household.

Table 6 Stunting by age and urban-rural residence: results from logistic regression

Stunting among Egyptian children by age and residence: *P*-values of logistic regression coefficients for selected risk factors

| | Age of child | | | |
| | 6-23 months | | 24-59 months | |
Risk factors	Urban	Rural	Urban	Rural
Electricity		.0255	.0100	
Source of drinking water	.0468		.0010	
Type of toilet facility		.0007		.0048
Floor material				.0258
Ownership of goods	.0434	.0001	.0124	
Birth interval				.0378
Parents' consanguinity		.0347		
Mother's education				
Mother's work status				
Antenatal care	.0011	.0158		

The determinants of stunting differed in rural areas. Among younger children (6-23 months) in rural areas, significant variables included ownership of household effects, type of sanitation facility, antenatal care, availability of electricity in the household, and parents' consanguinity. For older rural children, only three variables were significant: type of toilet facility, floor material, and previous birth interval.

4 Determinants of Severe Stunting

According to the 1995 DHS survey results, 13 percent of Egyptian children below 5 years were severely stunted. The prevalence was higher in deprived areas (e.g., 19 percent in rural Upper Egypt). The increase in overall level of stunting in Egypt—from 24 percent in 1992 to 30 percent in 1995—was mainly due to an increase in severe stunting. During the period, moderate stunting increased from 15 percent to 16 percent while severe stunting increased from 9 percent to 13 percent.

In urban areas, lack of electricity, piped water, household effects, and floor materials were the risk factors most strongly associated with severe stunting among children 6-23 months (Table 7). In addition, parents' consanguinity had a statistically significant association with severe stunting among children in this age group. For older children, the only significant odds ratio was availability of electricity in the household.

Table 7 Risk factors associated with severe stunting, urban Egypt

Percentage severely stunted*, odds ratios, and 95% confidence intervals for selected risk factors associated with stunting among urban children, by the child's age, Egypt 1995

		Age of child						
		6-23 months				24-59 months		
Risk factors	Category	Number	% severely stunted	Odds ratio	95% confidence interval	Number	% severely stunted	Odds ratio	95% confidence interval
Antenatal care	Yes	718	9.3			1,297	9.9		
	No	491	11.8	NS		951	11.3	NS	
Birth interval	>= 4 years	740	10.7			1,256	9.6		
	< 4 years	469	9.8	NS		993	11.6	NS	
Ownership of goods	3-6	668	9.3			1,317	10.1		
	1-2	404	8.2	NS		673	10.4	NS	
	None	136	21.3	2.65	1.58, 4.42	258	12.8	NS	
Parents' consanguinity	No	836	9.1			1,546	9.7		
	Yes	373	13.1	1.51	1.03, 2.22	703	12.2	NS	
Source of drinking water	Piped	1,067	8.7			2,018	10.2		
	Not piped	142	22.5	3.05	1.95, 4.77	230	13.5	NS	
Type of toilet facility	Flush toilet	1,175	10.1			2,174	10.4		
	No flush toilet	34	17.6	NS		75	13.3	NS	
Floor materials	Wood or tiles	936	8.0			1,740	11.0		
	Other	273	18.3	2.57	1.75, 3.79	507	8.7	NS	
Has electricity	Yes	1,199	10.1			2,218	10.2		
	No	10	40.0	5.94	1.65, 21.34	30	26.7	3.19	1.40, 7.25
Mother working for cash	Yes	255	10.6			468	11.8		
	No	954	10.3	NS		1,780	10.2	NS	
Mother's educational level	Higher	125	11.2			277	13.0		
	Secondary	563	10.3	NS		887	10.6	NS	
	Primary	260	7.3	NS		518	8.9	NS	
	No education	262	13.0	NS		566	10.6	NS	

* Height-for-age Z-score < -3SD from the mean of the reference population
NS – Not significant

For children 6-23 months living in rural areas, the prevalence of severe stunting was 20 percent. All of the risk factors were associated with severe stunting. The odds ratios among children living in households lacking electricity, lacking flush toilets, or absence of household effects were particularly high (Table 8). For older rural children, only two variables were associated with severe stunting: short birth interval and lack of flush toilet in the household.

Table 8 Risk factors associated with severe stunting, rural Egypt

Percentage severely stunted* odds ratios, and 95% confidence intervals for selected risk factors associated with stunting among rural children, by the child's age, Egypt 1995

		Age of child							
		6-23 months				24-59 months			
Risk factors	Category	Number	% severely stunted	Odds ratio	95% confidence interval	Number	% severely stunted	Odds ratio	95% confidence interval
Antenatal care	Yes	552	15.0			903	14.4		
	No	1,157	22.9	1.68		2,717	17.1	NS	
Birth interval	>= 4 years	746	17.2			1,402	14.8		
	< 4 years	965	22.9	1.43		2,218	17.4	1.22	1.02, 1.47
Ownership of goods	3-6	229	14.0			494	15.8		
	1-2	650	13.1	NS		1,290	16.3	NS	
	None	830	27.8	2.37	1.58, 4.42	1,837	16.7	NS	
Parents' consanguinity	No	862	18.2			1,819	16.8		
	Yes	847	22.6	1.31	1.03, 2.22	1,801	16.0	NS	
Source of drinking water	Piped	894	16.1			1,838	15.9		
	Not piped	816	25.0	1.74	1.95, 4.77	1,783	16.0	NS	
Type of toilet facility	Flush toilet	1,221	15.6			2,536	15.0		
	No flush toilet	489	32.3	2.59		1,084	19.7	1.40	1.16, 1.68
Floor materials	Wood or tiles	353	12.7			716	14.1		
	Other	1,357	22.4	1.98	1.75, 3.79	2,904	17.0	NS	
Has electricity	Yes	1,567	18.8			3,335	16.2		
	No	142	38.3	2.69	1.65, 21.34	284	18.0	NS	
Mother working for cash	Yes	163	13.4			412	14.6		
	No	1,546	21.1	1.73		3,209	16.6	NS	
Mother's educational level	Secondary +	395	17.2			731	15.2		
	Primary	357	21.9	1.63		726	19.1	NS	
	No education	959	22.2	1.66		518	15.9	NS	

* Height-for-age Z-score < -3SD from the mean of the reference population
NS – Not significant

As discussed above, results of the logistic regression[3] showed that determinants of severe stunting for children 6-23 months living in urban areas included source of drinking water, floor material, and mother's education. In rural areas, on the other hand, the determinants of severe stunting among children in this age group included type of toilet facility, availability of electricity, ownership of household effects and antenatal care. For older children, only the availability of electricity was significant in urban areas and type of toilet facility in rural areas (Table 9).

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[3]   The logistic regression equations for stunting are presented in Appendix A.

Table 9 <u>Severe stunting by age and urban-rural residence: results from logistic regression</u>

Severe stunting by age and residence: P-values of logistic regression coefficients for selected risk factors

| | Age of child | | | |
| | 6-23 months | | 24-59 months | |
Risk factors	Urban	Rural	Urban	Rural
Electricity		.0067	.0058	
Source of drinking water	.0038			
Type of toilet facility		<.00005		.0004
Floor material				
Ownership of goods	.0025	.0004		
Birth interval				
Parents' consanguinity				
Mother's education				
Mother's work status				
Antenatal care		.0304		

5   Summary and Conclusions

Results from the 1995 EDHS suggest that stunting among children remains as one of the major health problems in Egypt. The high prevalence of stunting is evidence of considerable chronic malnutrition among Egyptian children. Stunting is the outcome of the accumulated consequences of slowed skeletal growth and is usually due to micro-nutrient deficiencies, inadequate protein intake, or intensity of parasite infection. The long-term effects of stunting include poor developmental achievement in children (Lasky, 1981 and Powell and Grantham-McGregor, 1985) and functional impairment in adulthood (Martorell et al., 1992). In view of these adverse consequences, the relatively large proportion of children who are severely stunted is especially alarming. Almost half the stunted children are severely stunted, suggesting that a significant proportion of Egyptian children are at higher risk of morbidity and mortality in the short term and of signficant developmental impairment over the long term.

The findings presented in this paper suggest that the nutritional status of very young infants (under 3 months) in Egypt is equivalent to that of children in a well-nourished population. However, a continuous deterioration in nutrition status during the first two years of life is evident among children in both urban and rural areas and in all regions as well. Economically deprived areas (e.g., rural Upper Egypt) exhibit the greatest deterioration in nutrition status across age groups. These findings suggest that stunting among Egyptian children is not the result of biological or genetic factors but rather primarily the outcome of environmental conditions.

The significant associations found in this study between variables reflecting environmental conditions and stunting support this argument. The determinants of stunting varied by both the child's age and residence. However, a common feature of the results in all age-residence strata was the significant association between stunting and variables reflecting

living conditions (such as ownership of household effects, type of toilet facility, and source of drinking water). The significance of the type of toilet facility as a predictor of both stunting and severe stunting in rural areas suggests that parasite infections may play an important role in stunting the growth of children living in rural areas.

Finally, the problem of stunting among children clearly merits greater attention from policymakers and health planners. In addition, further research is needed to provide a better understanding of the relationship between nutritional status and breastfeeding and weaning practices, inadequate protein intake, and illness. Longitudinal studies and clinical trials should be launched to assess appropriate interventions especially in areas with high levels of stunting.

Appendix A

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Stunting: Logistic Regression Equations

1. Stunting

Age	Residence	$\alpha+\Sigma B_i x_i$
6-23 months	Urban	$.5935 - .2302 * ANC + .2084 * HEF - .2016 * WAT$
	Rural	$-.272 + .318 * HEF - .2012 * SAN - .1350 * ANC - .2098 * ELC$ $- .1068 * CNS$
24-59 months	Urban	$.3707 - .3233 * WAT - .536 * ELC$
	Rural	$.6268 - .11 * SAN - .1047 * FLR - .0755 * BIN$

2. Severe Stunting

Age	Residence	$\alpha+\Sigma B_i x_i$
6-23 months	Urban	$1.7718 - .3370 * FLR - .3741 * WAT$
	Rural	$.9064 - .3215 * SAN + .3722 * HEF - .2663 * ELC - .1551 * ANC$
24-59 months	Urban	$1.5924 - .5774 * ELC$
	Rural	$1.5698 - .1661 * SAN$

Note: List of variables (in alphabetic order):

ANC: **Antenatal care**
          0 *No*   1 *Yes*

BIN: **Previous birth interval**
          0 *< 4 years*   1 *4 years or 1st birth*

CNS: **Consanguinious relationship of parents**
          0 *Relatives*   1 *Not relatives*

EDU: **Mother 's educational level**
          0 *No education*   1 *Primary*
          2 *Secondary*   3 *Higher*

ELC: **Availability of electricity in household**
          0 *No*   1 *Yes*

FLR: **Floor material**
          1 *Wood or tiles*   0 *Other*

HEF: **Ownership of household effects**
          0 *None*   1 *1 to 2*
          2 *3 to 6*

SAN: **Type of toilet facility**
          1 *Flush toilet*   0 *Other*

WAT: **Source of drinking water**
          1 *Piped into residence*   0 *Other*

RK: **Mother 's work status**
          1 *Working for cash*   0 *Other*

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Who's Absent from Egyptian Schools?:
An Update on Gender Differences in Education

by

Nora Guhl Naguib

Expanding educational opportunities to all citizens has long been an important development objective of Egyptian policymakers. The social and economic benefits of an educated populace are well known. Moreover, promoting female education has an added social benefit: educated women have fewer and healthier children (World Bank, 1992). Improvements in the educational status of the Egyptian population are reflected in the secular decline in illiteracy, from 70 percent of the population in 1960 to 39 percent in 1996 (Central Agency for Public Mobilization and Statistics (CAPMAS, 1998)). Further improvements in literacy levels can be expected as enrollment ratios reported by UNESCO reached near-universal primary enrollment in 1990. In the same year, 82 percent of 12-17 year-olds were enrolled in secondary school (Naguib and Lloyd, 1994).

The enrollment trends shown in Table 1 indicate that substantial progress has been made in reducing differences in the educational participation of boys and girls. The ratio of female-to-male primary school enrollment increased from 0.67 in 1965 to 0.86 in 1990. Similarly, the ratio of female-to-male secondary school enrollment increased from 0.41 in 1965 to 0.77 in 1990 (Naguib and Lloyd, 1994).

Table 1   Trends in gross primary and secondary enrollment ratios by sex

Gross primary and secondary school enrollment by sex, Egypt 1965-1990

Year	Primary (ages 6-11)				Secondary (ages 12-17)			
	Total	Male	Female	F/M ratio	Total	Male	Female	F/M ratio
1965	70	90	60	0.67	26	37	15	0.41
1970	72	87	57	0.66	35	46	23	0.50
1975	75	89	60	0.67	43	55	31	0.56
1980	70	90	65	0.72	54	66	41	0.62
1985	91	101	82	0.81	66	77	54	0.70
1990	98	105	90	0.86	82	92	71	0.77

F/M = female/male
Source: Naguib and Lloyd, 1994

Despite these improvements in reducing the gender gap, important educational disparities between boys and girls remain. The purpose of this paper is to explore those disparities using data from the 1995 Egypt Demographic and Health Survey (DHS) (El-Zanaty et al.,1996). In particular, this paper focuses on the educational participation of rural girls since much of the gender gap arises from the limited involvement of rural girls in formal schooling (Selim, 1995).

1   Data

The analysis reported in this study is mainly based upon data obtained from the nationally representative sample of 15,567 households interviewed in the 1995 Egypt DHS. For each household member aged 6 years and older, the household survey obtained information on current school attendance and on the highest level of education the person attended (if any) and the highest grade completed at that level. A total of 30,819 children aged 6 to 19 years old were living at home at the time of the survey and are included in the analysis of the household data from the 1995 DHS.

Table 2 provides a basic demographic and socio-economic profile of these children. The majority (54 percent) of the youth were of primary school age (i.e., 6-12 years old), while 46 percent were of preparatory and secondary school age (i.e., 13-19 years old). Fifty-eight percent of the youth resided in rural areas. Very few of the youth were reported as working at the time of the survey (7 percent).

Relatively few of the youth lived in small households. Table 2 shows that 88 percent of youth lived in households with 5 or more members. Less than one-third of the youth lived in households with a low standard of living[1], with more than two-thirds living in households with a medium or high standard of living. Information on the educational status of the heads of the households in which the youth lived highlight the relatively low levels of educational attainment among Egyptian adults. Sixty-four percent of households in which the youth lived were headed by individuals who had either no education or only some primary schooling.

In looking at the factors that are associated with school attendance, the paper employs data collected in a special education module that was incorporated in the woman's questionnaire. The module obtained information on school enrollment, type of school the child attended, reasons for dropping out of school, and reasons for missing school for each of the woman's children aged 6-15 years. The paper also considers information obtained in the 1995 DHS from the women themselves on the reasons for never attending or dropping out of school.

2   Gender Differences In Educational Outcomes

Gender differences in schooling

Despite the progress made in reducing the gender gap, marked differences in male-female educational attainment continue to exist among children in Egypt. Table 3 shows that gender differences in educational outcomes begin with the initial decision to enroll a child in school and widen with age. From age 10 years and older, girls were more than twice as likely as boys not to have any formal schooling. At ages 16-19 years, nearly 20 percent of girls remained without education compared to only 7 percent of boys.

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[1]   The household standard of living index was created from a set variables related to housing conditions and ownership of consumer durables (El-Zanaty, 1995).

Table 2 Demographic and socio-economic characteristics of Egyptian youth

Percent distribution of household population aged 6-19 years by demographic
and socio-economic characteristics, Egypt 1995

Demographic and socio-economic characteristics	Weighted percent	Weighted number	Unweighted number
Sex			
Male	50.8	14,799	15,723
Female	49.2	14,351	15,087
Age			
6-9	30.4	8,853	9,467
10-12	23.6	6,886	7,305
13-15	21.5	6,247	6,590
16-19	24.6	7,164	7,448
Urban-rural residence			
Urban	42.5	12,401	12,114
Rural	57.5	16,749	18,696
Place of residence			
Urban Governorates	19.8	5,759	4,773
Lower Egypt	43.0	12,544	9,720
Urban	11.7	3,419	2,773
Rural	31.3	9,124	6,947
Upper Egypt	36.3	10,,578	13,717
Urban	10.5	3,066	3,182
Rural	25.8	7,512	10,535
Frontier Governorates	0.9	270	2,600
Work status			
Working	7.2	2,096	2,066
Paid in cash	5.2	1,523	1,467
Paid in kind	0.2	71	85
Paid in cash and in kind	0.6	172	208
Not paid	1.1	330	306
Not working	92.8	2,7054	28,744
Number of household members			
1-2	0.9	250	238
3-4	10.8	3,146	2,916
5-7	52.5	15,314	15,121
8-10	25.0	7,292	8,333
>10	10.8	3,148	4,202
Household standard of living			
Low	31.6	9,215	9,882
Medium	34.7	10,128	10,253
High	33.6	9,807	10,675
Education of household head			
No education	41.5	12,100	13,090
Some primary	22.5	6,546	6,940
Completed primary/some secondary	16.2	4,708	4,892
Completed secondary/higher	19.9	5,796	5,888
Total	100.0	-	-
Number	29,150	29,150	30,810

Table 3   Years of schooling completed among school-aged youth

Percent distribution of school-aged youth (6-19 years) by number of years of completed schooling, age, and sex, Egypt 1995

Age	Number of years of completed schooling				
	0 years	1-3 years	4-6 years	7-9 years	10-12 years
Male					
6-9	34.1	65.1	0.9	0.0	0.0
10-12	6.7	19.9	60.6	12.7	0.0
13-15	5.6	7.1	16.5	62.3	8.6
16-19	7.2	4.6	14.6	17.1	48.9
Total	15.1	27.6	21.5	20.3	13.7
Female					
6-9	40.8	58.2	1.0	0.0	0.0
10-12	17.8	18.3	53.2	10.7	0.0
13-15	18.8	6.4	12.2	54.7	7.9
16-19	19.9	4.7	12.3	14.1	42.2
Total	25.4	24.1	18.6	17.9	12.2

The lower levels of girls' enrollment are reflected in the lower percentages of girls completing all stages of schooling compared to boys. At ages 16-19 years, for example, 49 percent of boys had completed 10-12 years of schooling compared to 42 percent of girls.

Table 4 shows the percentage of household population aged 6-19 years who are currently attending school by age, sex, and residence. There are clear differentials in school enrollment by both gender and residence. Looking at gender differences, boys were more likely than girls to be attending school; at the time of the 1995 DHS, 89 percent of boys aged 6-9 were currently attending school compared to 79 percent of girls in the same age group. Similar differentials existed among older children, with the size of the gap increasing with the age of the children.

The gender differentials in Table 4 are more striking within rural areas, especially rural Upper Egypt. For example, at the time of the 1995 DHS, 87 percent of boys aged 6-9 in rural areas were currently attending school compared to 70 percent of girls. The education gap increased with age; in the 16-19 age group, 29 percent of rural girls were currently attending school compared to 47 percent of boys in the same age group. The gender gap was most evident in rural Upper Egypt, where only 17 percent of girls aged 16-19 were currently attending school compared to 44 percent of boys.

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Table 4 Current school attendance among school-aged youth

Percentage of school-aged youth (6-19 years) who are currently attending school, by age, sex, urban-rural residence, and place of residence, Egypt 1995

	Urban	Rural	Urban Gov.	Lower Egypt Urban	Lower Egypt Rural	Upper Egypt Urban	Upper Egypt Rural	Frontier Gov.	Total
					Male				
6-9	92.8	86.7	93.1	93.8	90.9	91.0	82.6	90.3	89.3
10-12	89.9	84.6	91.0	89.1	87.4	88.6	81.2	89.5	86.7
13-15	78.2	71.9	74.8	79.8	75.2	81.9	67.6	78.3	74.6
16-19	57.2	46.7	59.3	57.6	49.5	53.0	43.5	47.6	51.4
Total	69.3	65.1	69.1	70.2	67.5	68.3	62.3	69.1	66.9
					Female				
6-9	93.2	69.8	93.0	95.6	82.5	90.6	55.5	81.1	79.3
10-12	90.1	66.6	88.0	92.7	80.5	91.4	49.7	78.0	76.9
13-15	80.4	51.7	80.2	83.1	65.0	77.8	36.1	65.4	64.1
16-19	52.1	28.6	54.5	59.3	36.7	37.4	16.9	35.1	39.0
Total	66.2	45.4	66.3	69.4	54.7	62.4	34.0	54.9	39.0

Trends in school attendance

A comparison of data from the 1992 and the 1995 DHS surveys indicates that there were no major changes in the school attendance of either boys and girls during the period between the surveys. Table 5 shows that at both points in time about 84 percent of boys aged 6-15 years and

Table 5 Trends in current school attendance, 1992-1995

Percentage of youth aged 6-15 years currently attending school by sex, age, and residence, Egypt 1992 and 1995

Residence	Male 1992	Male 1995	Female 1992	Female 1995
Urban-rural residence				
Urban	88.1	87.7	88.2	88.3
Rural	80.0	81.7	62.5	63.6
Place of residence				
Urban Governorates	88.6	87.3	88.7	87.4
Lower Egypt	84.7	85.9	78.0	80.6
Urban	90.6	88.0	90.6	90.7
Rural	82.6	85.1	73.6	76.9
Upper Egypt	79.2	80.7	59.3	59.5
Urban	84.6	87.9	84.6	87.0
Rural	77.0	77.9	48.6	48.2
Frontier Governorates	-	86.5	-	75.6
Total	83.5	84.2	73.6	74.1

Source: 1992 - Selim, 1995: Table 1
       1995 - unpublished tables

74 percent of girls aged 6-15 years were attending school. Table 5 also shows that there were small changes in the school attendance of 6-15 year olds within the various regions of Egypt during the period between the two surveys.

Differentials in school attendance

As noted in Selim (1995), the gender gap in education is largely a rural phenomenon. Table 6 shows that there was virtually no difference between males and females in attendance levels in the 1995 DHS results for urban areas. Thus, nearly all of the overall gender gap in Egypt is owed to marked gender differences in attendance in rural areas. Moreover, rural Upper Egypt stands out as having the lowest levels of attendance by both sexes as well as the largest gender gap.

Table 6 Current school attendance by background characteristics

Percentage of school-aged youth (6-19 years) currently attending school by sex, age, and selected background characteristics, Egypt 1995

Background characteristics	6-12 years		13-19 years	
	Male	Female	Male	Female
Urban-rural residence				
Urban	91.6	91.8	66.7	65.1
Rural	85.8	68.4	58.7	39.5
Place of residence				
Urban Governorates	92.2	90.7	66.2	66.0
Lower Egypt	90.0	85.0	63.8	55.0
Urban	91.8	94.3	68.3	70.0
Rural	89.3	81.6	62.0	49.4
Upper Egypt	84.2	64.0	57.9	35.8
Urban	89.9	90.9	65.4	57.3
Rural	82.0	53.1	54.6	26.6
Frontier Governorates	90.0	79.7	63.0	49.6
Number of household members				
1-2	78.2	59.7	42.2	26.9
3-4	90.8	88.0	67.5	46.9
5-7	90.2	84.0	67.1	60.4
8-10	84.4	68.1	55.9	43.6
>10	83.6	64.2	50.0	33.0
Household standard of living				
Low	79.2	60.7	46.7	31.9
Medium	90.3	80.3	59.8	49.1
High	95.5	93.5	77.8	68.2
Education of household head				
No education	81.5	63.5	51.1	36.5
Some primary	89.1	78.2	59.6	46.8
Completed primary/some secondary	92.6	87.6	68.2	62.3
Completed secondary/higher	96.8	96.6	89.6	78.3
Total	88.2	78.2	62.2	50.7

Table 6 also details differences among other groups in school attendance levels in 1995. The school attendance of Egyptian youth was highest in households with 3-7 members. The lowest attendance was found in the smallest households (1 or 2 members). These households are probably the most economically vulnerable, including, for example, a widow and her child.

The school attendance of Egyptian youth is positively associated with the economic level of the household, as reflected either by the standard of living index or by the education of the head of the household. The gender gap in school attendance was quite evident for both primary and secondary school-aged children, except in households with the highest standard of living and households whose head had completed the secondary level or higher. Even among the latter households, while there was only a narrow gender gap between the school attendance of primary school-aged children (6-12 years), a wider gender gap existed among older youth (13-19 years).

Reasons for non-enrollment

Ever-married women aged 15-49 who had children 6-15 years that were not currently in school were asked in the 1995 DHS about the main reason the child was not enrolled. Gender differences are apparent in the reasons for non-enrollment (Table 7). Reasons reflecting financial motivations were offered much more often as the reason for girls' non-enrollment than for that of boys. For example, 38 percent of mothers cited "too expensive" as the main reason for girls aged 10-15 years were not enrolled while 26 percent cited expense as the main reason non-enrollment of boys in the same age group. Another reason given frequently for older girls' non-enrollment

Table 7 Reasons for non-enrollment

Percent distribution of school-aged youth (6-15 years) not currently enrolled in school by the main reason that mother gave for the child not being enrolled by sex and age, Egypt 1995

Reason not enrolled	6-9 years		10-15 years	
	Male	Female	Male	Female
Too old	2.6	1.7	1.9	2.2
Too young	45.9	24.0	0.7	0.1
Marriage age	0.0	0.0	0.0	0.5
School not useful	1.2	1.9	1.4	2.3
Failed exams	1.6	0.9	34.2	15.1
Expelled	0.0	0.1	0.8	0.2
Too far	1.0	1.2	0.6	2.1
Too expensive	27.7	40.5	25.6	38.1
Boys/girls in school	0.0	0.2	0.1	0.1
Male/female teacher	0.0	0.0	0.4	0.2
Has enough schooling	0.0	0.1	0.1	0.3
Need in home	0.8	7.1	2.1	12.5
Need in farm/business	1.5	3.0	6.0	3.4
No need to educate boys/girls	0.3	3.0	0.0	2.7
Other	17.3	16.1	26.0	20.0
Total	100.0	100.0	100.0	100.0
Number	455	868	1,082	1,612

was "needed at home." Again this factor was cited less frequently as a reason for boys' non-enrollment. Among boys aged 10-15 years, performance ("failed exams") was the most frequently given reason for non-enrollment.

3   Educational Status of Rural Girls

As the results described above indicate, parents in rural Egypt are often less likely to educate their daughters than their urban counterparts. This pattern occurs within a context where girls are expected to marry at very young ages, schools are not oriented to rural needs, there are few employment opportunities for females, and the hardships of poverty help to define unmarried daughters as an economic burden (Ibrahim, 1994).

The social and economic context just described, however, is not homogeneous across rural Egypt. In general, rural families in Upper Egypt are more conservative with regards to girls' education than rural families in Lower Egypt. For example, El-Hamamsy (1994) found that attitudes and behaviors related to female education, employment, and marriage in a village in Aswan were more conservative than those in a village in Sharkia. Moreover, El-Hamamsy also reported that attitudes and behaviors can vary markedly among different tribal or ethnic groups. For example, family planning and health professionals in the village in Aswan that El-Hamamsy studied reported that early marriage was not as prevalent among Nubians and the Gaafra tribe as it was among the Saidis, the majority group. Such observations point to the importance of ethnic and familial reference groups in shaping opportunities for girls.

The importance of localized contexts can be seen when examining attendance figures for girls by governorate within rural Upper Egypt (Table 8). Within the region of rural Upper Egypt, the educational participation of girls varies widely. At one end of the spectrum, 73 percent of school-aged girls (6-19 years) were currently attending school in rural Aswan. At the other extreme, in the rural areas of Menya and Beni Suef, 28 and 32 percent of girls, respectively, were attending school. In between these two extremes lie the rural areas of Qena, Giza, Fayoum, Assuit, and Souhag. In these areas, girls' (6-19 years) current school attendance ranged from 42 to 49 percent.

Table 8 <u>Current school attendance among rural females by governorate, Upper Egypt</u>

Percentage of rural females aged 6-19 years currently attending school, by age and governorate, rural Upper Egypt 1995

Age	Governorate							
	Giza	Beni Suef	Fayoum	Menya	Assuit	Souhag	Qena	Aswan
6-9	57.1	46.0	61.8	38.7	58.6	66.2	59.7	90.7
10-12	55.4	35.8	50.5	30.5	56.7	59.6	53.4	94.8
13-15	29.2	28.7	36.1	31.2	42.2	45.7	31.4	74.6
16-19	19.4	12.9	22.5	9.5	22.2	18.7	15.1	30.4
Total	42.3	32.4	45.9	28.4	46.3	49.4	41.7	72.8

Analysis of the reasons mothers in rural areas gave for not sending their daughters to school supports the findings of El-Hamamsy (1994) that the expense of schooling is a major constraint on girl's attendance (Table 9). "Needed at home" was another reason which was cited often for not enrolling girls in school. In comparing the responses of rural Upper Egyptian women with those of similar women in Lower Egypt in Table 9, it is clear that "too expensive" and "needed in home" were given as reasons for girls' non-enrollment to a lesser extent in Lower Egypt than in Upper Egypt.

Table 9 Reasons for non-enrollment of girls in rural Egypt

Percent distribution of rural girls 6-15 years who were not enrolled in school by the main reason that the mother gave for the child not being enrolled according to age and region of residence, Egypt 1995

| Main reason | 6-9 years | | 10-15 years | |
not enrolled	Upper Egypt	Lower Egypt	Upper Egypt	Lower Egypt
Too old	1.4	2.9	2.7	2.4
Too young	16.5	30.5	0.0	0.4
Marriage age	0.0	0.0	0.3	0.7
School not useful	2.1	1.8	1.4	2.4
Failed exams	0.6	2.3	8.9	22.7
Expelled	0.0	0.0	0.3	0.4
Too far	0.1	0.9	1.2	2.5
Too expensive	45.9	34.9	45.3	30.9
Boys/girls in school	0.3	0.0	0.2	0.0
Male/female teacher	0.0	0.0	0.0	0.2
Has enough schooling	0.0	0.0	0.2	0.8
Need in home	8.4	8.1	15.7	10.4
Need in farm/business	3.8	2.0	3.2	5.4
No need to educate girls	4.0	0.7	4.5	0.3
Other	16.9	15.9	15.9	20.5
Total	100.0	100.0	100.0	100.0
Number	516	214	780	466

Within rural Upper Egypt, some variation is evident across governorates in the reasons for girls' non-enrollment. For example, Table 10 shows that more than half of mothers of 6-9 year-old non-enrolled girls in Fayoum, Beni Suef, and Qena reported that it was "too expensive" to send their daughters to school compared to less 40 percent of mothers in Giza, Assuit, and Souhag. In Menya, one-third of mothers reported that their non-enrolled daughters aged 10-15 years were needed in the home, farm, or family business. In Fayoum, in contrast, this reason was given by only 6 percent of mothers whose daughters age 10-15 years were not enrolled.

What insights can differences in the socio-economic and demographic context of the rural areas of Upper Egypt provide in explaining girls' school attendance within the region? Table 11 presents a picture of relatively severe economic deprivation in rural Upper Egypt, with the exception of Aswan. In rural Aswan, the percentage of households falling into the lowest category on the living standard index was 20 percent; in contrast, in the other governorates of

Table 10 Main reason for non-enrollment of girls by governorate, rural Upper Egypt

Percent distribution of rural girls aged 6-15 years who were not enrolled in school by the main reason that mother gave for the child not being enrolled according to age and governorate, Upper Egypt 1995

Main reason not enrolled	Governorate							
	Giza	Beni Suef	Fayoum	Menya	Assuit	Souhag	Qena	Aswan[1]
6-9 years								
Too expensive	32.0	53.0	66.7	48.7	32.6	39.2	52.5	-
Too young	32.0	12.1	8.3	12.8	17.6	21.5	13.6	-
Need in home/ farm/business	8.0	10.6	2.1	17.9	10.9	9.5	13.6	-
School not useful/ no need to educate girl	8.0	10.6	4.2	5.2	2.6	4.6	10.2	-
Failed exams	0.0	0.0	2.1	1.3	0.0	0.6	0.0	-
Other reasons	20.0	13.6	16.7	14.1	36.2	24.6	10.2	-
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	-
Number	56	62	38	150	69	62	76	-
10-15 years								
Too expensive	45.6	53.7	59.3	47.2	38.8	34.6	43.0	-
Too young	3.5	1.9	2.3	1.1	1.9	6.8	2.5	-
Need in home/ farm/business	14.0	12.0	5.8	32.5	19.4	14.5	17.7	-
School not useful/ no need educate girl	0.0	10.1	4.7	5.6	5.5	10.3	8.9	-
Failed exams	15.8	8.3	9.3	0.0	11.3	16.2	6.3	-
Other reasons	21.1	13.9	18.6	13.5	22.9	17.6	21.6	-
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	-
Number	128	102	68	171	110	92	102	-

[1] Fewer than 25 cases

Table 11 Socio-economic indicators for rural Upper Egypt by governorate

Socio-economic characteristics of rural households and individuals by governorate, Upper Egypt 1995

Socio-economic characteristics	Governorate							
	Giza	Beni Suef	Fayoum	Menya	Assuit	Souhag	Qena	Aswan
% of households with low standard of living	54.9	56.7	66.7	61.2	58.3	50.8	42.0	20.1
% of husbands working in agriculture	32.9	51.6	40.7	60.0	55.0	40.3	38.0	31.3
% of ever-married women with no education	65.3	65.1	60.9	68.2	67.9	66.9	73.9	44.4
% of ever-married women who are working	9.7	10.1	10.2	3.9	4.3	4.8	3.0	6.2

Upper Egypt, the percentage of rural households at the low end of the living standard index varied from 42 percent in Qena to 67 percent in Fayoum. Rural Aswan also had the lowest percentages of husbands working in agriculture and of women who had never attended school among the governorates. The relatively advantaged socio-economic position of rural Aswan compared to rural areas in the other governorates of Upper Egypt is accompanied by the highest levels of girls' school attendance in the region (73 percent).

Rural Menya appears to be one of the most disadvantaged areas, with one of the highest percentages of households falling at the low end of the standard of living index. This area also has the highest percentage of husbands working in agriculture. The dominance of agricultural activity in the area may explain why a substantial proportion of rural mothers from Menya reported that they needed their daughters to work in the home, farm, or family business. This need, as well as the perception of daughters' schooling as being "too expensive", may help explain why the school attendance of rural girls (6-19 years) in Menya was so low (28 percent).

Studies suggest that parents in rural Upper Egypt generally spend less on educating their children than parents in other regions. One study of patterns of expenditures on children among Egyptian households showed that annual per child expenditures were 419 Egyptian pounds in rural Upper Egypt compared to 1,289 pounds in Cairo (Moreland et al., 1996). Moreover, "if the family's economic circumstances are difficult so that only some children can be educated, girls are likely to be the first victims" (El-Hamamsy, 1994: 23).

These types of economic explanations, however, seem to be of less help in understanding why households in Fayoum, the governorate with the highest percentage of households with a low standard of living, enrolled 46 percent of girls aged 6-19 years in school. A possible explanation lies in the nature of employment opportunities that are available to men and women in Fayoum. Fayoum has relatively high proportions of men working in non-agricultural occupations and of working women. Thus, households in rural Fayoum may be more involved in the modern market economy than households in rural Menya, leading them to place more value on education for girls as well as boys.

Other explanations take into account social values. Studies suggest that rural Upper Egyptian parents often perceive limited benefits to girls' education. In fact, many rural Upper Egyptian parents perceive only potential harm. One woman reported:

> My father would not allow any of us (girls) to go to school because, they say, it is shameful for a girl to go to school. So he kept me at home to help my mother take care of my siblings, to learn all about housework, washing and cooking so that I may become a "lady of the house" (El-Hamamsy, 1994: 22).

Added to the social, psychological, and economic costs of educating girls is a strong preference for early marriage. Sixty percent of ever-married women in rural Upper Egypt reported that girls should marry ideally before the age of 20 years. By contrast, as Table 12 shows, only 33 percent of ever-married women in rural Lower Egypt expressed the same opinion. Upon marriage, girls become part of the husband's household and are not expected to

provide old-age support for their parents. Hence, rural Upper Egyptian parents prefer to invest their limited resources in their sons' education, since sons are more likely to contribute to the parents' old-age support (Khafagy, 1990).

Table 12 Opinion on the ideal marriage age for girls in rural Egypt

Percent distribution of rural ever-married women aged 15-49 by their opinion about the ideal marriage age for girls according to region, Egypt 1995

Ideal marriage age for girls	Upper Egypt	Lower Egypt
<15	3.3	1.2
15-19	56.9	31.6
20+	36.8	66.3
Does not matter	2.9	0.9
Total	100.0	100.0
Number	3,543	4,377

Table 13 illustrates the stark variations within rural Upper Egypt with respect to early marriage preferences. At one extreme, 37 percent of mothers in rural Aswan favor teen marriage compared to 74 percent of mothers in rural Menya. Interestingly, a little more than one-half of mothers in rural Fayoum favor teen marriage. These preferences for somewhat later marriage (compared to Menya, for example) may help to explain why the poorest rural area of Upper Egypt is motivated to send a greater proportion of girls aged 6-19 years to school than some other governorates.

Table 13 Opinion on the ideal marriage age for girls in rural Egypt

Percent distribution of rural ever-married women aged 15-49 by their opinion about the ideal marriage age for girls according to governorate, Upper Egypt 1995

Ideal marriage age for girls	Governorate							
	Giza	Beni Suef	Fayoum	Menya	Assuit	Souhag	Qena	Aswan
<15	1.1	3.8	5.0	3.4	3.0	1.9	5.8	1.5
15-19	48.3	66.4	47.9	71.0	57.8	37.1	65.5	35.1
20+	48.5	26.3	44.1	22.5	39.2	56.9	23.4	62.2
Does not matter	2.1	3.3	3.0	2.7	0	4.1	5.3	1.2
Total	100	100	100	100	100	100	100	100
Number	423	374	287	789	475	550	516	121

The strong son bias in educational expectations among rural parents is summarized in the words of a rural woman, "My father used to say, 'the girl is for the house and the boy for education' " (El-Hamamsy 1994:22-23). This bias is also evident in Table 14. In 1995 DHS mothers were asked, "If parents have one son and one daughter and can only send one child to the university, which child should they send?" About one-third of all rural mothers reported that the ability of the child should determine the outcome. Among those who expressed a preference,

sons were mentioned more frequently than daughters in both regions. However, the preference for sons was stronger in Upper Egypt than Lower Egypt; 55 percent of mothers in rural Upper Egypt reported "son," compared to 46 percent in rural Lower Egypt.

Table 14   Attitude about university education for a son or daughter in rural Egypt

Percent distribution of rural mothers according to their opinion about whether a son or a daughter should be sent to university if only one child could be sent by region, Egypt 1995

University education	Upper Egypt	Lower Egypt
Son	55.2	45.8
Daughter	10.0	18.0
Depends on capability	30.3	34.2
Not sure	4.5	1.9
Total	100.0	100.0
Number	3,543	4,377

Further insights about the challenges facing girls' education in rural areas can be found in Table 15. Ever-married women less than 25 years old who had attended school were asked to provide the reason why they left school. Among women with less than six years of schooling, "did not like school" was the dominant reason. Khafagy (1990) reports that the attendance patterns of girls in rural Upper Egypt are irregular because of the demands for their household labor. This attendance pattern affects girls' school performance as well as teachers' attitudes toward female students. Some girls report both verbal and physical abuse from their teachers. Such abuse causes girls to hate school and to drop out.

Table 15   Main reason for leaving school among rural women

Percent distribution of rural ever-married women 15-24 years by the main reason for leaving school according to the number of years of completed schooling and region, Egypt 1995

	Years of completed schooling			
	Less than six years		Six or more years	
Reason left school	Upper Egypt	Lower Egypt	Upper Egypt	Lower Egypt
Got married	4.2	3.8	24.5	21.0
Take care of children	11.8	6.4	1.3	1.3
Family needs help	14.4	11.4	3.8	0.5
Could not pay for school	10.3	9.4	5.4	2.0
Need to earn money	0.0	0.8	1.4	0.0
Graduated, enough	0.6	0.0	36.3	49.4
Did not pass exams	11.5	21.0	11.8	15.4
Did not like school	30.3	35.4	6.5	7.6
School not accessible	0.5	3.2	1.0	0.9
Other	16.0	8.7	7.8	1.9
Don't know	0.5	0.0	0.2	0.0
Total	100.0	100.0	100.0	100.0
Number	164	131	223	434

Other reasons rural women with less than six years of schooling give for leaving school include "family needed help," "did not pass exams," "take care of children," and "could not afford school." Among rural women who attained six or more years of schooling, "graduated/had enough" was the dominant reason for leaving school. Other important reasons given were "got married" and "did not pass exams."

4   Summary and Conclusions

This paper has documented the improvement in the educational participation of Egyptian youth that has occurred since the 1960's. Furthermore, this paper has presented evidence of a secular decline in the education gender gap between girls and boys.

Despite these improvements, much work needs to be done. A central concern involves the low levels of educational participation of girls in many of the rural areas of Upper Egypt. While the extensive poverty that exists in the region constrains the educational opportunities of girls, it is not the only factor (nor a sufficient factor) that limits girls' horizons. The decisions that families make with regard to the schooling of girls represent the outcome of a complex cost-benefit analysis in which the costs of girls' schooling in rural Upper Egypt (including the direct costs of books, supplies, etc., as well as the indirect costs of girls' lost household labor and potential damage to a girl's reputation) are weighed against the potential benefits. Further research is clearly needed into the factors that constrain educational opportunities for girls.

What role can the government play in altering this cycle of low educational expectations, early marriage, and high fertility in rural Upper Egypt? Clearly efforts to promote rural development should be enhanced. Particular attention should be paid to promoting the education of girls. The World Bank argues that investment in girls' education could provide one of the highest returns in developing countries (World Bank, 1992).

How can the demand for girls' education in rural Upper Egypt be altered? One way is to lower the costs of educating girls. The World Bank suggests that scholarship funds should be established and free books and other supplies should be provided for girls (World Bank, 1992). Demonstration projects can be undertaken in order to experiment with these subsidies to girls' education. Will parents in rural Upper Egypt take advantage of such subsidies if offered and under what conditions, e.g., more "girl-friendly" schools? These experiments should receive high priority among development projects. The long-term benefits of educating girls now clearly exceed the minimal investments required now.

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